



FUTURES EDUCATIONAL SYSTEMS

Practical Learners' Guide

Mathematics

5th Primary
2nd Term

NAME:

CLASS:



Unit 7:
Adding and Subtracting Fractions

Unit 8:
Adding and Subtracting Mixed Numbers

Unit 9:
Multiplying and Dividing Fractions



Unit 10:
Two-Dimensional Plane Figures and Coordinates Planes

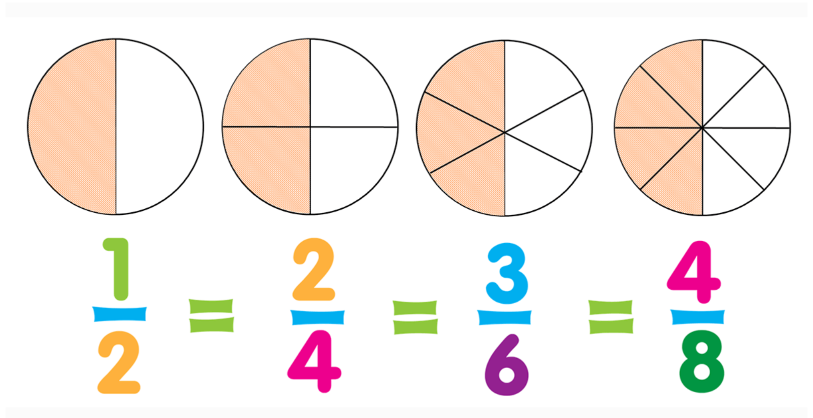
Unit 11:
Volume

Unit 12:
Pie Charts



Pre – study: Equivalent fraction – Simplest form of fraction

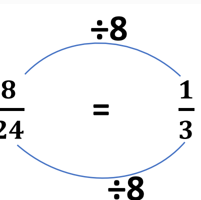
Examples of equivalent fraction:



$\times 2$

$\frac{8}{24} = \frac{16}{48}$

$\times 2$



÷8

$\frac{8}{24} = \frac{1}{3}$

÷8

Complete:

1) $\frac{2}{8} = \frac{6}{\dots\dots} = \frac{\dots.}{16} = \frac{\dots.}{4}$

2) $\frac{12}{24} = \frac{6}{\dots\dots} = \frac{\dots.}{8} = \frac{24}{,\dots.}$

Write each of the following fraction in the simplest form :

a) $\frac{15}{25}$ = …….

b) $\frac{18}{36}$ = ……

c) $\frac{14}{49}$ = ……..

d) $2\,\frac{8}{24}$ = …….

e) $3\,\frac{6}{12}$ = …….

F) $1\frac{4}{16}$ = …….



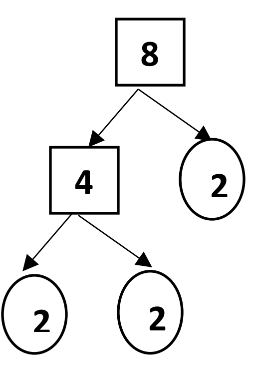
Unit 7

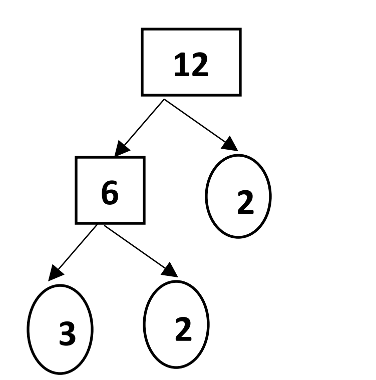
lesson 1 : Finding Like Denominators using the LCM

For example

$\frac{3}{8}$ and $\frac{5}{12}$ are two unlike denominator fractions.







8 = 2 x 2 x 2

12 = 2 x 2 x 3

LCM = 2 x 2 x 2 x 3 = 24

Find equivalent fractions their denominator = LCM

$\frac{3}{8} = \frac{\ldots\ldots}{24}$ and $\frac{5}{12} = \frac{\ldots\ldots}{24}$

$\frac{9}{24}$ and $\frac{10}{24}$ are two like denominator fractions

Change each pair of unlike denominator fractions into like denominator fractions using LCM of the unlike denominator:

a - $\frac{1}{2}$, $\frac{3}{8}$

b- $\frac{5}{10}$, $\frac{3}{8}$

c- $\frac{7}{10}$, $\frac{11}{15}$

d- $\frac{5}{3}$, $\frac{1}{12}$

e- $\frac{1}{6}$, $\frac{5}{8}$

f- $\frac{8}{15}$, $\frac{5}{6}$



1) Choose the correct answer:

1) Which of the following is not equivalent to $\frac{15}{20}$?

a) $\frac{3}{4}$ b) $\frac{25}{100}$ c) $\frac{30}{40}$ d) $\frac{9}{12}$

2) The two like denominator fractions which are equivalent to the two fractions

$\frac{2}{5}$, $\frac{3}{15}$ are ……………………………..

a) $\frac{5}{15}$, $\frac{3}{15}$ b) $\frac{2}{5}$, $\frac{1}{5}$ c) $\frac{2}{5}$, $\frac{3}{5}$ d) $\frac{8}{20}$, $\frac{5}{20}$

3) The two like denominators fractions represent the models

a) $\frac{3}{4}$, $\frac{1}{3}$ b) $\frac{6}{8}$, $\frac{2}{8}$ c) $\frac{8}{12}$, $\frac{4}{12}$ d) $\frac{9}{12}$, $\frac{4}{12}$

4) The LCM of the denominators $\frac{6}{12}$ of and $\frac{4}{18}$ is…………….

a) 12 b) 36 c) 24 d) 6

5) The smallest like denominator of $\frac{3}{4}$ and $\frac{4}{5}$ is……………………….

a) 20 b) 10 c) 12 d) 40

2) Solve the following question:

Aya and Doha are planting flowers in their gardens. Aya has enough flowers to take up $\frac{2}{3}$ of her garden. Doha will plant flowers in $\frac{3}{5}$ of her garden. They decide to write their fractions with like denominator.

……

……

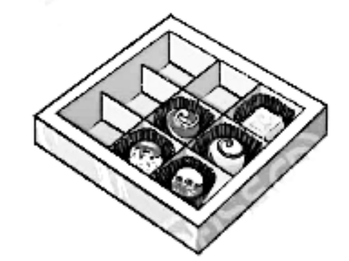
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lesson 2 : Estimating Sums and Differences of Fractions

Using benchmark fractions to estimate Sums and differences of fractions:






$\frac{1}{6}$ — Close to **0** package

$\frac{5}{9}$ — Close to $\frac{1}{2}$ package

$\frac{7}{8}$ — Close to **1** package

Remarks:

1. If the numerator is much **less than half** the denominator, the fraction is close to **0.**
2. If the numerator is **about half** the denominator, the fraction is close to $\frac{1}{2}$ **.**
3. If the numerator is much **more than half** the denominator, the fraction is close to **1.**

Example:

a) $\frac{5}{6} + \frac{2}{5} =$

Estimate: $1 + \frac{1}{2} = 1\frac{1}{2}$

b) $\frac{8}{9} - \frac{3}{7} =$

Estimate: $1 - \frac{1}{2} = \frac{1}{2}$

Indicate whether the give estimate is an overestimate or an underestimate:

a) $\frac{9}{10} + \frac{2}{5}$ **is about** $1\frac{1}{2}$ **(overestimate or underestimate)**

b) $\frac{1}{3} + \frac{5}{9}$ **is about** $\frac{1}{2}$ **(overestimate or underestimate)**

c) $\frac{7}{12} + \frac{12}{11}$ **is about** $1\frac{1}{2}$ **(overestimate or underestimate)**



Exercises

1)Estimating sums and differences use models to find the following:

a) $\frac{1}{3}+\frac{5}{6}=$ ……………………………

b) $\frac{1}{2}-\frac{1}{6}=$ ……………………………

2) Estimate the following fractions and find the sum or difference

use the benchmark: $0, \frac{1}{2}, 1$:

1) $\frac{1}{4}+\frac{2}{3}=\cdots+\cdots=\cdots$

2) $\frac{3}{4}-\frac{2}{3}=\cdots+\cdots=\cdots$

3) $\frac{7}{15}+\frac{6}{8}=\cdots+\cdots=\cdots$

4) $\frac{5}{7}-\frac{4}{9}=\cdots+\cdots=\cdots$

5) $\frac{4}{5}-\frac{5}{8}=\cdots+\cdots=\cdots$

6) $\frac{2}{9}+\frac{4}{7}=\cdots+\cdots=\cdots$

7) $\frac{5}{6}-\frac{7}{12}=\cdots+\cdots=\cdots$

8) $\frac{7}{13}-\frac{1}{4}=\cdots+\cdots=\cdots$





Indicate whether the given estimate is an overestimate or an underestimate:

a) $\frac{7}{12} + \frac{1}{3}$ is about $\frac{1}{2}$ (overestimate or underestimate)

b) $\frac{3}{10} + \frac{4}{5}$ is about 1 (overestimate or underestimate)

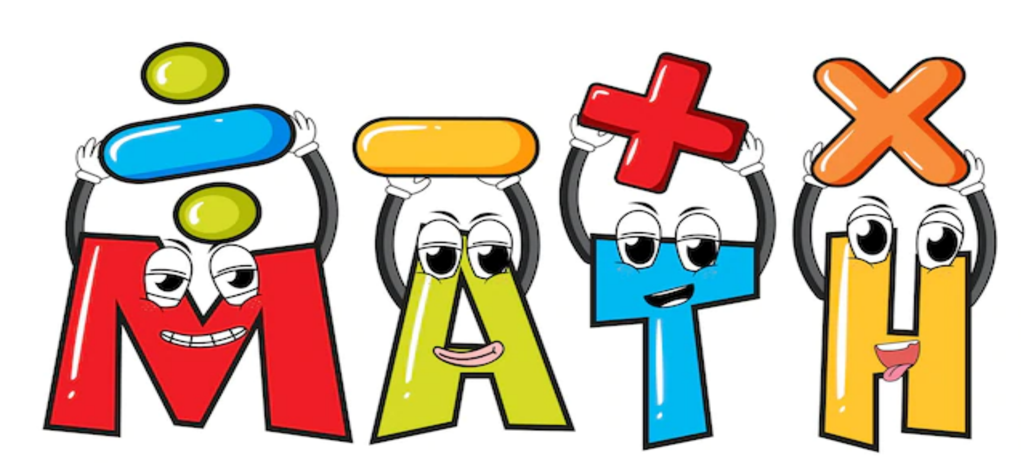
c) $\frac{5}{9} + \frac{1}{3}$ is about $\frac{1}{2}$ (overestimate or underestimate)

d) $\frac{7}{8} + \frac{1}{4}$ is about 1 (overestimate or underestimate)

e) $\frac{2}{3} + \frac{2}{9}$ is about 1 (overestimate or underestimate)

f) $\frac{3}{5} + \frac{8}{10}$ is about $1\frac{1}{2}$ (overestimate or underestimate)

g) $\frac{1}{5} + \frac{2}{11}$ is about 0 (overestimate or underestimate)

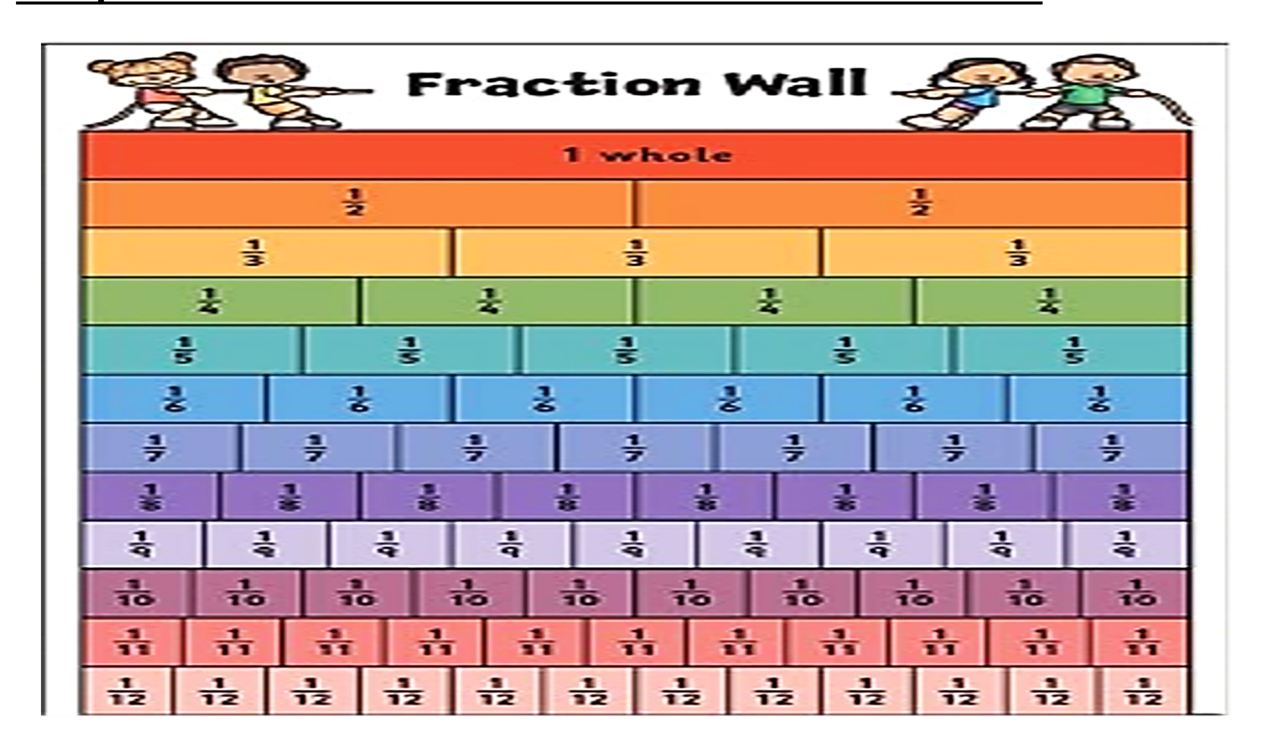




Lesson3

Using Models to add and Subtract Fractions

Use your fraction wall to evaluate each sum or difference:



a) $\frac{7}{12} - \frac{1}{3} =$ ………………………

d) $\frac{5}{8} + \frac{1}{4} =$ ………………………

b) $\frac{5}{9} - \frac{1}{3} =$ ………………………

e) $\frac{1}{3} + \frac{5}{9} =$ ………………………

c) $\frac{3}{10} - \frac{1}{5} =$ ………………………

f) $\frac{1}{5} + \frac{3}{10} =$ ……………………

Kamel says that $\frac{11}{12} - \frac{7}{10}$ Will be about $\frac{1}{2}$, Ahmed says that $\frac{11}{12} - \frac{7}{10}$ will be closer to 0.

Do you agree with Kamel or Ahmed? Explain your thinking.

……

……

……



Lesson 4

Adding and Subtracting Fractions

with unlike denominators, Part 1

- **To add or subtract fractions *denominators* should be the *same.***
- **To find common denominators, find *L.C.M***

$$\frac{3}{4} + \frac{5}{12}$$

- ***Step 1:* Find L.C.M of 4 & 12**

***Multiples of 4:* 4 , 8 , 12** ***Multiples of 12*: 12 , 24 ,36**

***L.CM:* 12**

- ***Step 2:* Change denominator to 12 "L.C.M" (by multiplying 4 ×3)**

$$\frac{3\times3}{4\times3} + \frac{5}{12}$$

$$\frac{9}{12} + \frac{5}{12}$$

- ***Step 3:* Add or subtract numerators *only*, denominator remains the same**

$$\frac{9}{12} + \frac{5}{12} = \frac{14}{12}$$

- ***Step 4:* Simplify if needed.**

$$\frac{14\,(\div 2)}{12(\div 2)} = \frac{7}{6}$$



Evaluate the following fractions :

a) $\frac{2}{5} + \frac{4}{10} =$ ………………

b) $\frac{11}{16} - \frac{3}{8}$ = ……………….

c) $\frac{7}{9}$ - $\frac{1}{3}$ = ……………………….

e) $\frac{1}{2}$ + $\frac{11}{12}$ = ………………………

f) 1 - $\frac{1}{3}$ = …………………………

g) $\frac{15}{15}$ - $\frac{2}{3}$ = ………………………….

h) $\frac{2}{14}$ + $\frac{6}{7}$ = …………………………

i) $\frac{2}{3}$ - $\frac{17}{30}$ = …………………………….

j) $\frac{5}{12}$ - $\frac{7}{36}$ = …………………………….

k) $\frac{3}{12}$ + $\frac{2}{4}$ = ……………………………

L) 1 - $\frac{2}{5}$ = ……………………………



Lesson 5

Adding and Subtracting Fractions

with unlike denominators, part 2

steps to solve:

1. Get a common denominator (by using L.C.M or cross multiplication).
2. Add or subtract numerators.
3. Simplify the result if needed. (notice that $\frac{3}{27}$ can be simplified since the numerator and denominator are both divisible by 3).

Example:

$\frac{3}{4} + \frac{1}{8} = \frac{3 X 2}{4 X 2} + \frac{1}{8} = \frac{6}{8} + \frac{1}{8} = \frac{7}{8}$ (L.C.M is 8)

Convert from unlike to like fractions, then find each sum or difference:

a. $\frac{1}{2} + \frac{1}{3}$ = ……………………………

b. $\frac{1}{5} - \frac{1}{6}$ = ……………………………

c. $\frac{1}{4} + \frac{2}{3}$ = …………………………..

d. $\frac{4}{5} - \frac{1}{7}$ = ………………………….

e. $\frac{4}{5} - \frac{2}{3}$ = ………………………….

f. $\frac{2}{3} - \frac{3}{5}$ = ………………………………..

g. $\frac{5}{6} - \frac{5}{8}$ = …………………………………

h. $\frac{5}{6} + \frac{3}{8}$ = ………………………………..

i. $\frac{11}{12} - \frac{7}{8}$ = ………………………………..

j. $\frac{1}{8} + \frac{4}{5} + \frac{3}{10}$ = …………………………

Estimate each sum or difference. Then evaluate each expression by rewriting the fractions with like denominators: -

a) $\frac{11}{16} - \frac{3}{8}$ = ...

b) $\frac{5}{12} + \frac{7}{8}$ = ...

c) $\frac{5}{7} + \frac{2}{3}$ = ...

d) $\frac{2}{5} + \frac{4}{10}$ = ...

e) $1 - \frac{1}{4} - \frac{1}{6}$ = ...

f) $\frac{2}{7} + \frac{1}{4}$ = ...

g) $\frac{8}{11} - \frac{2}{3}$ = ...

h) $\frac{6}{7} - \frac{1}{3}$ = ...

i) $\frac{7}{8} + \frac{4}{5}$ = ...

j) $\frac{4}{5} - \frac{1}{3}$ = ...

k) $\frac{6}{7} + \frac{3}{6}$ = ...

m) $1 + \frac{7}{10} + \frac{3}{4}$ = ...

n) $2 - \frac{7}{9} - \frac{1}{6}$ = ...

O) $\frac{1}{3} - \frac{1}{5}$ = ...

p) $1 - \frac{1}{2} - \frac{1}{6}$ = ...

q) $\frac{3}{4} - \frac{1}{5}$ = ...

r) $\frac{5}{6} - \frac{2}{5}$ = ...

s) $\frac{1}{2} - \frac{2}{4}$ = ...

T) $\frac{2}{3} + \frac{1}{5}$ = ...

u) $\frac{5}{6} + \frac{1}{5}$ = ...

v) $\frac{7}{10} - \frac{1}{3}$ = ...

w) $\frac{1}{3} + \frac{2}{7}$ = ...



Lesson 6

Solving Story Problems with Fractions

1) Hadeer buys $\frac{7}{8}$ kilograms of tomato. She uses $\frac{2}{3}$ kg of the tomato to make a salad. How many kilograms of tomatos are left?

………

………

………

2) Tahani baked a bunch of cakes for dessert. She ate on Monday $\frac{1}{4}$ of them, and on Tuesday $\frac{1}{8}$ and on Wednesday $\frac{2}{5}$ of them. What the fraction that represent the number of cakes that Tahani ate?

………

………

………

3) In the garden, $\frac{1}{2}$ of the flowers are white and $\frac{1}{3}$ of the flowers are pink. The remaining flowers are blue, what the fraction of the flowers are blue?

………

………

………



4) Ali expected his assignment to take $\frac{2}{3}$ of an hour. He Completed it in $\frac{1}{2}$ of an hour. In how many fewer minutes did Ali Complete his assignment than He expected?

……………………………………………………………………………………………………..

……………………………………………………………………………………………………..

…………………………………………………………………………………………………….

5) In the garden, $\frac{1}{2}$ of the lilies are white and $\frac{1}{3}$ of the lilies are pink. The remaining 30 lilies are blue. How many lilies are in the pond all together?

……………………………………………………………………………………………………..

……………………………………………………………………………………………………..

……………………………………………………………………………………………………..

6) Lyly uses $\frac{4}{5}$ of her monthly salary to pay for her food, rent, utilities, and transportation. After these expenses, she is left 2000 L.E what is the Lyly`s monthly salary?

……………………………………………………………………………………………………..

……………………………………………………………………………………………………..

……………………………………………………………………………………………………..



Unit 8

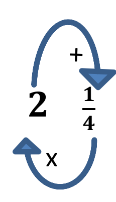
Lesson (1)

Adding and Subtracting

Mixed Numbers with like denominators

Remember

Mixed number to improper fraction | **improper fraction to mixed number**



$2\ \frac{1}{4}$ $\frac{9}{4}$

$\frac{18}{7}$ **18÷7=2R4** $2\ \frac{4}{7}$

Mixed number **equivalent mixed number**

Regroup 1 whole to $\frac{5}{5}$

$3\ \frac{2}{5}$ = $2\ \frac{7}{5}$

First: Adding and subtracting using improper fraction:

1-Rewrite each mixed number an improper

2- add and subtract the numerator

$1\frac{3}{5} + 3\frac{1}{5} =$

$\frac{8}{5} + \frac{16}{5} = \frac{24}{5} = 4\ \frac{4}{5}$

$7\frac{1}{4} - 5\frac{3}{4} =$

$\frac{29}{4} - \frac{23}{4} = \frac{6}{4} = \frac{3}{2} = 1\ \frac{1}{2}$

Evaluate each sum or difference, simplify if possible

a) $2\frac{3}{5} + 1\frac{2}{5} =$

b) $3\frac{2}{4} - 2\frac{1}{4} =$

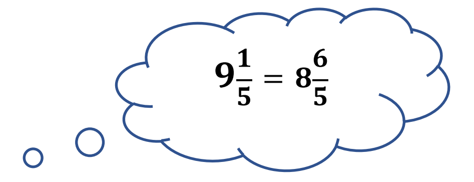
c) $1\frac{3}{7} + 1\frac{3}{7} =$

d) $5\frac{5}{6} - 3\frac{1}{6} =$



Second :<u>adding and subtracting by decomposing mixed number</u>

1- Add and subtract a whole number
2- Add and subtract the fraction parts
3- Combine the two resulted parts



$2\frac{5}{6} + 2\frac{3}{6} =$

$(2+2) + (\frac{5}{6} + \frac{3}{6})$

$= 4\frac{8}{6}$

$9\frac{1}{5} - 5\frac{4}{5}$

$8\frac{6}{5} - 5\frac{4}{5}$

$(8 - 5) - (\frac{6}{5} - \frac{4}{5}) = 3\frac{2}{5}$

Evaluate each sum or difference . (simplify if possible)

1) $1\frac{3}{5} + 1\frac{3}{5}$ = ……….

2) $2\frac{1}{4} + 1\frac{3}{4}$= ……….

3) $7\frac{1}{4} - 2\frac{3}{4}$ = ……….

4) $1\frac{2}{3} + 2\frac{2}{3}$ = ……….

5) $4\frac{5}{9} + 2\frac{7}{9}$ = ……….

6) $5\frac{2}{7} - 3\frac{4}{7}$ = ……….

7) $8\frac{3}{4} + 2\frac{3}{4}$ = ……….

8) $3\frac{2}{5} - 1\frac{4}{5}$ = ……….

<u>Equation with fraction:</u>

You can solve an equation with a fraction in a same way, you solve an equation with a whole number, you get a variable alone on one side

Example:

$3\frac{1}{5} + b = 5\frac{3}{5}$ (use inverse operation)

$b = 5\frac{3}{5} - 3\frac{1}{5} = 2\frac{2}{5}$

Another way

$2\frac{5}{8} - d = 1\frac{1}{8}$ (use whole part model)

$d = 2\frac{5}{8} - 1\frac{1}{8} = (2 - 1) + (\frac{5}{8} - \frac{1}{8})$

$= 1\frac{4}{8} = 1\frac{1}{2}$

$2\frac{5}{8}$	
d	$1\frac{1}{8}$



Evaluate each of the following:

1) $B + 2\frac{1}{8} = 5\frac{1}{8}$ *B =……………………………………………………….*

2) $Y - 3\frac{1}{4} = 3\frac{3}{4}$ Y =………………………………………………………..

3) $R + 6\frac{5}{7} = 7\frac{2}{7}$ R =…………………………………………………………

4) $4\frac{3}{11} - L = 1\frac{7}{11}$ L =…………………………………………………………

5) $Z + 2\frac{3}{4} = 5\frac{1}{4}$ Z =…………………………………………………………

6) $2\frac{5}{6} + A = 3\frac{1}{6}$ A =…………………………………………………………

Complete the chart by rewriting the given values in two other forms :

	Mixed number	Improper fraction equivalent	Mixed number equivalent
1	$3\frac{1}{3}$	$\frac{\dots}{\dots}$	$2\frac{\dots}{\dots}$
2	$2\frac{5}{8}$	$\frac{\dots}{\dots}$	$1\frac{\dots}{\dots}$
3	$4\frac{3}{4}$	$\frac{\dots}{\dots}$	$3\frac{\dots}{\dots}$
4	$\frac{\dots}{\dots}$	$\frac{22}{4}$	$3\frac{\dots}{\dots}$



LESSON 2

Finding Like Denominators

- **Find Like Denominators and Rewrite the given mixed numbers with like denominators in each of the following:**

	Mixed Number	Like Denominator	Rewritten in Equivalent Form
1)	$3\frac{1}{4}$ $2\frac{1}{2}$	……………………	………… , …………
2)	$3\frac{50}{100}$ $4\frac{12}{30}$	10	………… , …………
3)	$5\frac{8}{40}$ $1\frac{9}{15}$	……………………	………… , …………
4)	$2\frac{2}{3}$ $8\frac{12}{8}$	3	………… , …………
5)	$3\frac{6}{8}$ $2\frac{4}{7}$	……………………	………… , …………



LESSON 3

Estimation with Mixed Numbers

We can use benchmark fractions and number sense of mixed numbers to estimate mentally.

Example:

$7\frac{a}{8}$ is little greater than $7\frac{1}{2}$ since $\frac{a}{8} = \frac{1}{2}$ then a = 4,

$\frac{a}{8}$ is a little greater than $\frac{1}{2}$ then a =5

Exercise:

1)Use number sense and estimation to complete the mixed numbers: -

a) $7\frac{k}{9}$ is about $7\frac{3}{4}$ Estimate for k ....

b) $4\frac{b}{9}$ almost 5 Estimate for b ....

c) $8\frac{8}{d}$ is nearly $8\frac{1}{2}$ Estimate for d ....

d) $5\frac{20}{g}$ is a little less than 6 Estimate for g ....

e) $5\frac{p}{30}$ is about $5\frac{3}{4}$ Estimate for p ....

f) $2\frac{10}{f}$ is slightly greater than 6 Estimate for f ....

g) $10\frac{3}{c}$ is slightly less than $10\frac{1}{2}$ Estimate for c ....

h) $9\frac{h}{54}$ is slightly greater than $9\frac{1}{2}$ Estimate for h ....



Estimate each sum or difference:

a) $8\frac{3}{4} - 5\frac{1}{5}$ Estimate ………..

b) $4\frac{2}{4} + 2\frac{5}{8}$ Estimate ………..

c) $11\frac{7}{8} - 6\frac{5}{9}$ Estimate …….

d) $4\frac{3}{5} - 2\frac{7}{12}$ Estimate …….

e) $5\frac{19}{21} - 2\frac{1}{3}$ Estimate ………

f) $7\frac{6}{15} - 3\frac{17}{33}$ Estimate ………

g) $9\frac{2}{11} + 2\frac{3}{100}$ Estimate ……..





LESSON 4

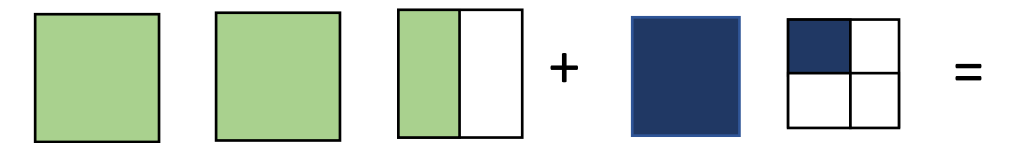
Using Models to Add and Subtract Mixed Numbers

Note: I can use models to represent addition and subtraction of mixed numbers with unlike denominators

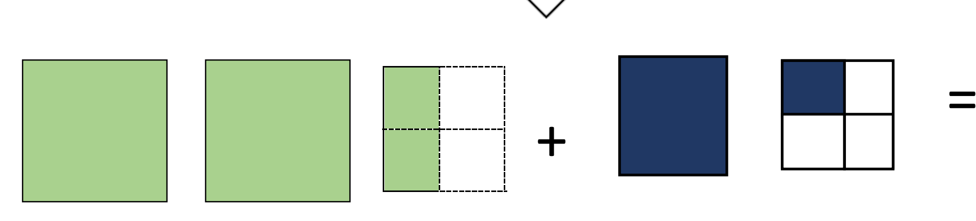
EX_1 : Using Area Models to Add Mixed Numbers Use an area model to find the sum

✓ $2\frac{1}{2} + \ 1\frac{1}{4}$

Step 1 : Modeling :



Step 2 : Dividing :



Step 3 : Adding :



$= \ 3\frac{3}{4}$



Solve by yourself:

a) $12\frac{3}{4} + 2\frac{5}{12}$ = …………….

c) $5\frac{1}{4} + 3\frac{2}{9}$ = …………….

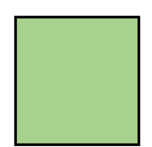
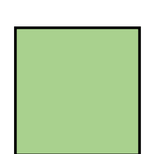
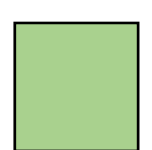
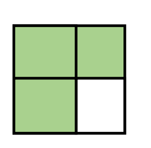
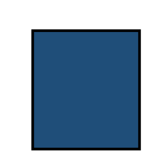
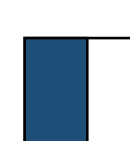
b) $7\frac{5}{12} + 2\frac{1}{6}$ = …………….

d) $7\frac{2}{5} + 3\frac{1}{4}$ = …………….

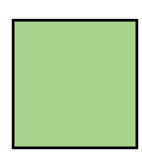
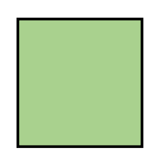
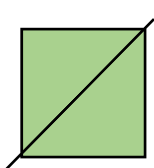
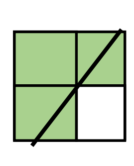
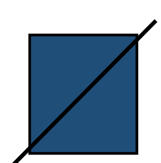
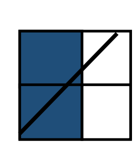
EX_2 :Using Area Models to Subtract Mixed Numbers Use an area model to find each difference.

- $3\frac{3}{4} - 1\frac{1}{2}$

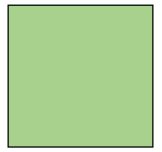
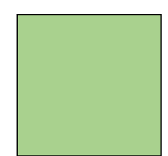
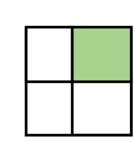
Step 1 : Modeling :

    -   =

Step 2 : Dividing :

    -   =

Step 3 : subtracting :

   $= 2\frac{1}{4}$



Solve by yourself:

$a)\ 4\frac{1}{3} - 1\frac{1}{2}$ = …………….

c) $5\frac{1}{4} - 2\frac{3}{7}$ = …………….

b) $6\frac{4}{5} - 4\frac{1}{4}$ = …………….

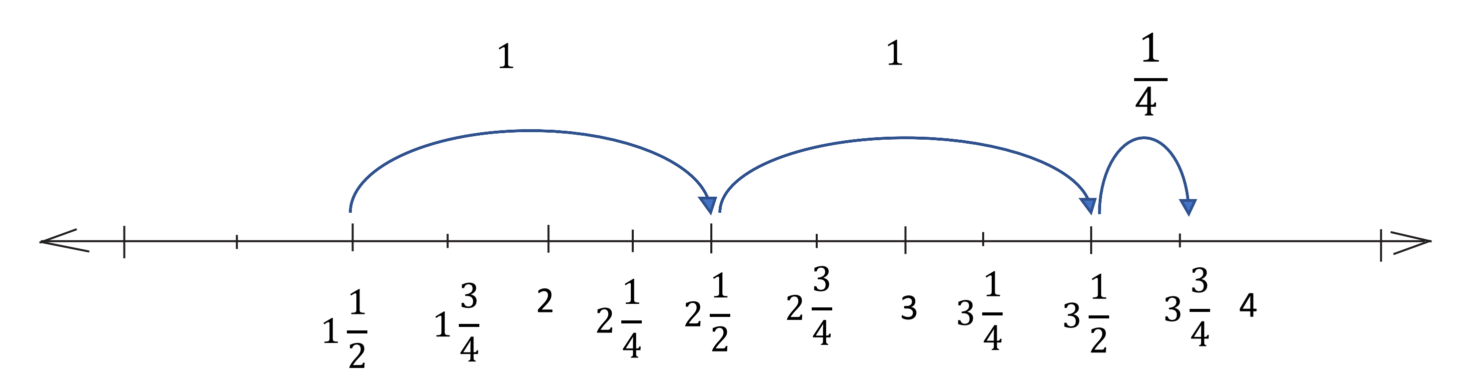
d) $5\frac{3}{5} - 4\frac{5}{7}$ = …………….

EX_3 Using Number Lines to Subtract Mixed Numbers Use a number line to find the difference.

- $3\frac{3}{4} - 1\frac{1}{2}$

First: draw your number line

Second: we add to the subtrahend until we get to the minuend



The Difference = $1 + 1 + \frac{1}{4} = 2\frac{1}{4}$

Solve by yourself:

$a)\ 4\frac{1}{4} - 2\frac{1}{6}$ = …………….

b) $2\frac{7}{8} - 1\frac{1}{2}$ = …………….



Lesson 5

Adding and Subtracting Mixed Number's part 1

Addition and subtraction strategies (estimate and evaluate each sum or difference and simplify it if possible)

a) $3\frac{4}{5} - 1\frac{1}{3}$ = estimate: ………………… evaluate : …………………

b) $9\frac{1}{2} - 2\frac{5}{8}$ = estimate: ………………… evaluate : …………………

c) $4\frac{5}{9} + 3\frac{2}{3}$ = estimate: ………………… evaluate : …………………

d) $4\frac{1}{4} - 2\frac{5}{6}$ = estimate: ………………… evaluate : …………………

e) $3\frac{2}{3} - 2\frac{1}{3}$ = estimate: ………………… evaluate : …………………

f) $4\frac{5}{9} - 3\frac{1}{3}$ = estimate: ………………… evaluate : …………………

g) $8\frac{1}{2} - 2\frac{3}{7}$ = estimate: ………………… evaluate : …………………

h) $6\frac{4}{5} + 4\frac{2}{3}$ = estimate: ………………… evaluate : …………………



i) $4\frac{5}{6} - 2\frac{1}{6}$ = estimate: …………………. evaluate : …………………

j) $3\frac{5}{8} - 1\frac{1}{8}$ = estimate: …………………. evaluate : ………………….

k) $1\frac{2}{3} - 1\frac{15}{24}$ = estimate: …………………. evaluate : ………………….

<u>Rewrite a mixed numbers in two different ways:</u>

a) $4\frac{5}{6}$ = …………………. = ………………….

b) $2\frac{3}{7}$ = …………………. = ………………….

c) $5\frac{7}{9}$ = …………………. = ………………….

d) $3\frac{1}{3}$ = …………………. = ………………….

e) $5\frac{7}{10}$ = …………………. = ………………….

f) $2\frac{5}{6}$ = …………………. = ………………….

- **Hany collects $5\frac{1}{4}$ kilograms of corn. he gave $2\frac{3}{7}$ kg to his friend. he wants to know how many kilograms are left?**

…….

…….

…….



Lesson 6

Adding and Subtracting Mixed Numbers part 2

Solve each equation by adjusting the mixed numbers:

a) $3\frac{7}{8}+\frac{1}{4}=4+$ ……….

b) $1\frac{5}{6}+3\frac{1}{3}=2+$ ……….

c) $7\frac{5}{7}-5\ \frac{6}{7}=$ ………… -6

d) $6\frac{1}{8}-3\ \frac{3}{4}=$ ………… $-\ 4$

What is missing :

1) $A+3\frac{5}{6}=8\frac{1}{12}$ A=……………

2) $7\ \frac{5}{10}-b=5\ \frac{9}{20}$ b=……………

3) $8\frac{3}{5}+c=10\frac{3}{10}$ C= …………..

4) $F+7\frac{3}{4}=13\frac{15}{16}$ F=……………

5) $G-\ 4\frac{1}{4}=9\frac{3}{44}$ G= …………..



Lesson 7 - 8

Story Problem with Mixed Numbers

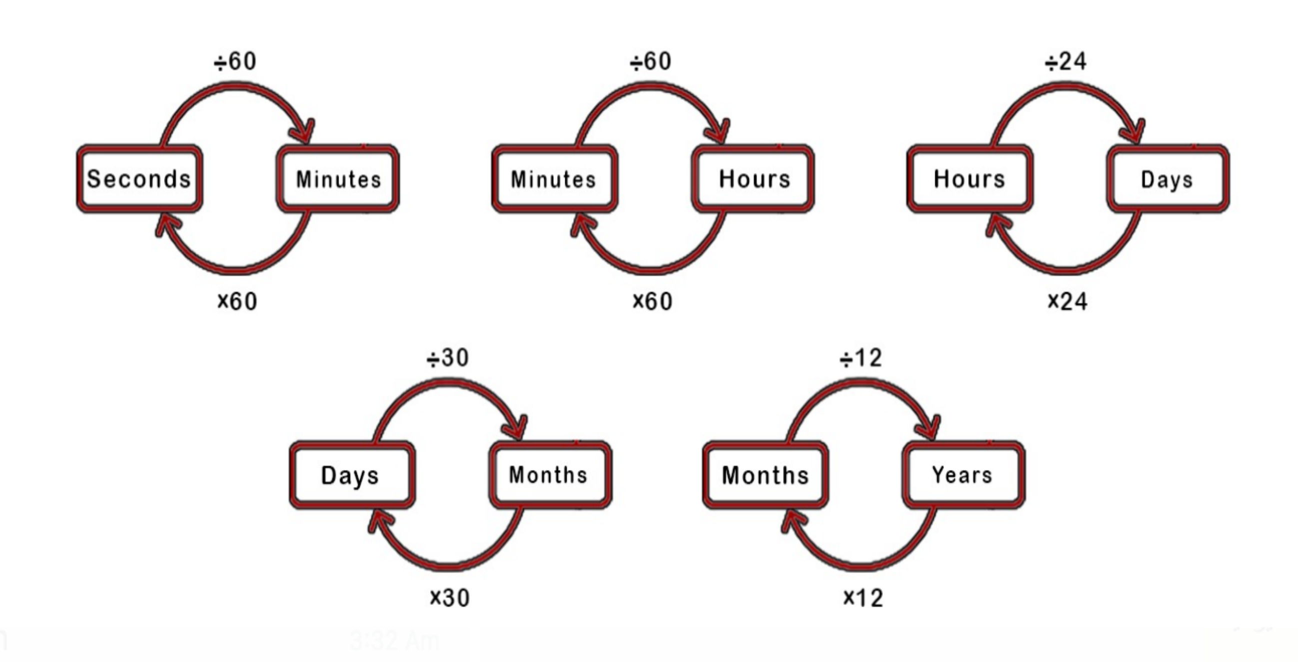


One year = 12 months

One hour= 60 minutes

One day = 24 hours

One minute = 60 seconds





Convert the mixed numbers to units of time:

a) 200 minutes = …………………… hours

b) $1\frac{1}{3}$ hours = …………………… minutes

c) $2\frac{1}{4}$ years = ……………………years and …………………… months

d) $\frac{1}{5}$ minutes = …………………… seconds

e) $1\frac{1}{6}$ days = …………………… hours

f) 150 seconds = …………………… minutes and …………………… seconds

g) $\frac{5}{6}$ years = …………………… months

h) 60 months = ……………………years

i) $\frac{3}{8}$ days = …………………… hours

j) $7\frac{3}{4}$ hours = …………………… hours and …………………… minutes

k) $3\frac{1}{4}$ hours = ………………… hours and …………………… minutes



1) Habiba is planting three plume thistle plants. It took her $\frac{3}{10}$ minute to plant the first one. The second plant took $\frac{1}{5}$ min longer to plant than the first one. The third plant took $\frac{1}{12}$ less time to plant than the second one. How long did it take to plant the third plume thistle?

……………………………………………………………………………………………………

……………………………………………………………………………………………………

……………………………………………………………………………………………………

2) Karim took $3\frac{1}{4}$ hours to paint a wall and $1\frac{2}{3}$ hours to paint a table, How much time did he take in all ?

……………………………………………………………………………………………………

……………………………………………………………………………………………………

……………………………………………………………………………………………………

3) Ali walked $1\frac{1}{2}$ hours in the first day, In the second day he walked $1\frac{3}{10}$ hours,

In the third day he walked for 80 minutes. How long did Ali walk in the three days?

……………………………………………………………………………………………………

……………………………………………………………………………………………………

……………………………………………………………………………………………………

4) Abeer is mixing juice for celebration. She mixes $5\frac{3}{4}$ liters of fruit juice concentrate with $1\frac{1}{2}$ liters more water than fruit juice concentrate. She needs

12 L of the mixture for the celebration. Does she have enough? why?

……………………………………………………………………………………………………

……………………………………………………………………………………………………

……………………………………………………………………………………………………



5) A rabbit took 3 jumps, the first jump was $\frac{3}{4}$ m long, the second jump was $\frac{2}{5}$ m longer than the first jump and the third jump was $\frac{1}{10}$ m shorter than the second jump. How long was the third jump?

………

………

………

6) Ola baked 4 identical basbuosa for celebration knowing that some guests like basbousa more than others, she cut each basbousa differently. When the celebration was over, she noticed there was some basbbousa left in each pan. There was $\frac{4}{15}$ left in one pan, and $\frac{1}{6}$ remained in another. Another pan $\frac{5}{12}$ remaining, and $\frac{3}{10}$ was uneaten in the last. Ola wondered how much basbousa in total was eaten at the celebration.

- How much basbousa was eaten at celebration?

………

………

………

- Which of the four pans had the least basbousa left?

………

………

………

- Ola wants to put the remaining basbousa in one pan will it fit?

………

………

………



Unit 9

Lesson 1 - 2

Multiplying a Fraction or Mixed Number by a Whole Number

Find the product in its simplest form if possible.

a) $\frac{3}{11}$ **x 4 = …………………………………**

b) $1\frac{3}{7}$ **x 3 = …………………………………**

c) $2\frac{3}{4}$ **x 2 = …………………………………**

d) $\frac{3}{5}$ **x 7 = ……………………………………**

e) $1\frac{1}{4}$ **x 6 = …………………………………**

f) $2\frac{3}{8}$ **x 6 = …………………………………….**

g) $3\frac{9}{10}$ **x 2 = …………………………………**

h) **5 x** $10\frac{1}{3}$ **= …………………………………**

i) **7 x** $2\frac{5}{8}$ **= …………………………………..**

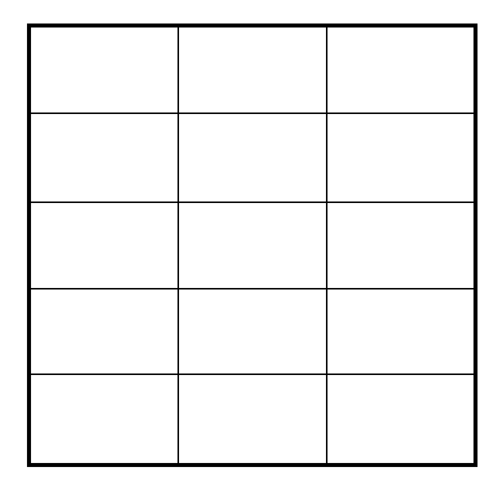
j) **4 x** $5\frac{3}{7}$ **= …………………………………..**



Lesson 3

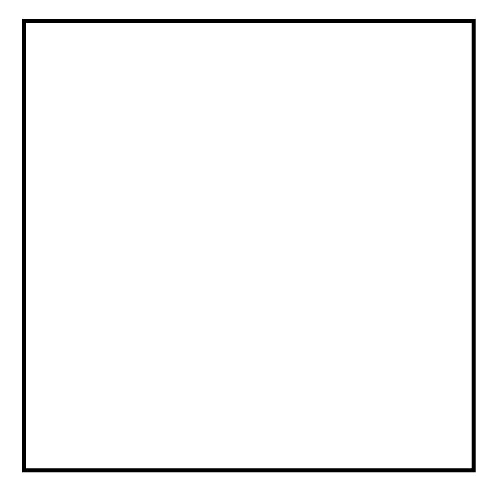
Understanding Multiplication with Fractions

Use the rectangular model to find each of the following:



$\frac{2}{3} \times \frac{4}{5}$ = ………………………

$\frac{1}{4} \times \frac{2}{5}$ = ………………………



$\frac{3}{8} \times \frac{1}{2}$ = ………………………

$\frac{5}{6} \times \frac{3}{4}$ = ………………………



Lesson 4

Multiplying Fractions by Fractions.

1-Let's Multiply: Find the product. Simplify your answers, if possible.

a) $\frac{3}{5} \times \frac{1}{2}$ =…………..

b) $\frac{1}{4} \times \frac{1}{4}$ =……………

c) $\frac{3}{4} \times \frac{2}{2}$ =………….

d) $\frac{3}{7} \times \frac{1}{3}$ =……………

e) $\frac{2}{9} \times \frac{2}{3}$ =……………

f) $\frac{1}{5} \times \frac{1}{4}$ =……………

g) $\frac{5}{7} \times \frac{3}{3}$ =……………



2- Make it simpler: Write each product in its simplest form.

a) $\frac{3}{8} \times \frac{1}{6}$ =............

b) $\frac{5}{12} \times \frac{3}{5}$ =............

c) $\frac{1}{4} \times \frac{8}{11}$ =............

d) $\frac{5}{8} \times \frac{2}{15}$ =.............

e) $\frac{4}{5} \times \frac{4}{9}$ =.............

f) $\frac{4}{9} \times \frac{3}{4}$ =..............

3- Find the product in its simplest form if possible.

a) $\frac{2}{4} \times \frac{3}{6}$ =..............

b) $\frac{4}{5} \times \frac{1}{8}$ =..............

c) $\frac{3}{8} \times \frac{8}{15}$ =..............



Lesson (5)
Multiplying Fractions and Mixed Number

To multiply mixed number by a fraction

1- Multiply a whole number by a fraction
2- Multiply a fraction of mixed number by a fraction
3- Add the product of each of them

Ex.

Multiply $3\frac{1}{2} \times \frac{2}{3}$ using the **(Distributive Property of Multiplication)**

$$\rightarrow \quad 3\frac{1}{2} \times \frac{2}{3} = \left(3 \times \frac{2}{3}\right) + \left(\frac{1}{2} \times \frac{2}{3}\right)$$

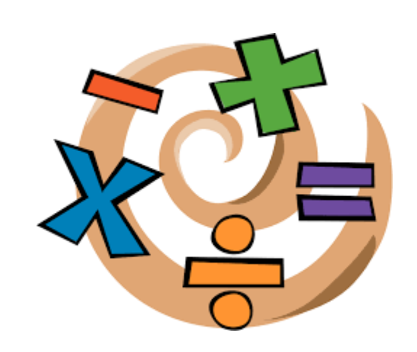
$$= \frac{6}{3} + \frac{2}{6}$$

$$= \frac{6}{3} + \frac{1}{3}$$

$$= \frac{7}{3}$$

Multiply $3\frac{1}{2} \times \frac{2}{3}$ using the **improper fraction**

$$\rightarrow \quad 3\frac{1}{2} \times \frac{2}{3} = \frac{7}{2} \times \frac{2}{3} = \frac{14}{6} = \frac{7}{3}$$





1) Find the product of each of the following using the Distributive Property of Multiplication.
(Simplify your answers when possible.)

a) $3\frac{1}{5} \times \frac{2}{3}$ = ……………………………………………………………………

b) $2\frac{1}{2} \times \frac{3}{7}$ =……………………………………………………………………

c) $3\frac{1}{3} \times \frac{5}{6}$ =……………………………………………………………………

d) $\frac{1}{2} \times 3\frac{1}{3}$ =……………………………………………………………………

e) $\frac{1}{6} \times 5\frac{1}{7}$ =……………………………………………………………………

f) $\frac{2}{3} \times 1\frac{4}{5}$ =……………………………………………………………………

g) $\frac{1}{4} \times 2\frac{1}{3}$ =……………………………………………………………………

h) $\frac{3}{4} \times 3\frac{1}{7}$ =……………………………………………………………………

i) $\frac{2}{3} \times 2\frac{4}{6}$ =……………………………………………………………………



2) Evaluate each product of Multiplication.
(Simplify your answers when possible.)

a) $2\frac{1}{4} \times \frac{2}{3}$ = …………………………….

b) $1\frac{5}{6} \times \frac{2}{5}$ = ………………………………

c) $3\frac{1}{2} \times \frac{3}{4}$ = ………………………………

d) $4\frac{1}{4} \times \frac{2}{3}$ = ………………………………

e) $2\frac{2}{7} \times \frac{1}{3}$ = ………………………………

f) $1\frac{1}{3} \times \frac{3}{8}$ = ………………………………

g) $3\frac{1}{3} \times \frac{2}{5}$ = ………………………………

f) $4\frac{1}{3} \times \frac{3}{7}$ = ………………………………

g) $5\frac{1}{3} \times \frac{3}{4}$ = ………………………………



Lesson (6)

Multiplying Mixed Numbers

first: Using area model:

Ex. $3\frac{1}{4}$ x $2\frac{2}{3}$ =………………

X	3	$\frac{1}{4}$
2	3 x 2 = 6	$\frac{1}{4}$ x $2 = \frac{2}{4} = \frac{1}{2}$
$\frac{2}{3}$	$3 \text{ x } \frac{2}{3} = \frac{6}{3} = 2$	$\frac{1}{4}$ x $\frac{2}{3} = \frac{2}{12} = \frac{1}{6}$

Find the product:

1- $2\frac{1}{3}\ x\ 6\frac{2}{5} = \cdots$

X	……	$\frac{\dots.}{\dots.}$
….		
$\frac{\dots.}{\dots..}$		



Find the product:

1) $3\frac{1}{4} \times 1\frac{1}{2}$ = (…… +…….) x (……+ ………)

=(……. X ……..)+(……. X ……..)+(……. X ……..)+(……. X ……..)

=……………………………………………………………………………..

2) $6\frac{1}{4} \times 2\frac{3}{4}$ = (…… +…….) x (……+ ………)

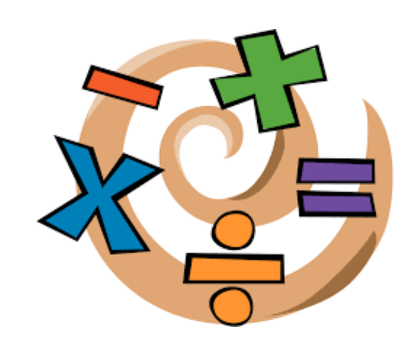
=(……. X ……..)+(……. X ……..)+(……. X ……..)+(……. X ……..)

=……………………………………………………………………………..

3) $4\frac{1}{7} \times 2\frac{3}{5}$ = (…… +…….) x (……+ ………)

=(……. X ……..)+(……. X ……..)+(……. X ……..)+(……. X ……..)

=……………………………………………………………………………..





Lesson (7)

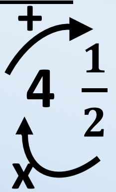
Multiplying Mixed Numbers using Improper Fractions.

Convert *the mixed number* $\mathbf{4}\frac{1}{2}$ *to an improper fraction.*

Solution

Step (1) :

Multiply the **denominator** 2 by the whole number 4



Step (2) :

Add the result to the **numerator** 1

(4 x 2) + 1 = 9

Step (3) :

Write the result at the top of the **denominator**, then :

$$4\frac{1}{2} = \frac{9}{2}$$



1) Convert the mixed number to an improper fraction:

a) $5\frac{1}{2}$ = …………………

b) $4\frac{2}{5}$ = ………………..

c) $2\frac{2}{5}$ = ………………..

d) $4\frac{3}{6}$ = ……………….

e) $6\frac{3}{8}$ = ……………….

f) $5\frac{2}{7}$ = ………………..

g) $2\frac{3}{4}$ = ……………….

h) $7\frac{1}{2}$ = ……………….

i) $8\frac{2}{5}$ = ………………..

j) $7\frac{1}{7}$ = ………………..

k) $3\frac{1}{5}$ = ……………….

l) $6\frac{4}{9}$ = ……………….

o) $4\frac{1}{4}$ = ……………….

p) $10\frac{4}{3}$ = ……………….

2) Match each mixed number to its equivalent improper fraction:

Mixed number	improper fraction
$4\frac{2}{4}$	$\frac{11}{2}$
$5\frac{3}{2}$	$\frac{18}{4}$
$7\frac{3}{4}$	$\frac{14}{3}$
$3\frac{4}{3}$	$\frac{13}{3}$
$5\frac{1}{2}$	$\frac{31}{4}$
$3\frac{5}{3}$	$\frac{13}{2}$



Multiplying mixed numbers using improper fractions

The three steps of multiplying fractions

Solve: $\frac{2}{6} \times \frac{9}{16}$

Step 1. Multiply the top numbers:

$$\frac{2}{6} \times \frac{9}{16} = \frac{2 \times 9}{} = \frac{18}{}$$

Step 2. Multiply the bottom numbers:

$$\frac{2}{6} \times \frac{9}{16} = \frac{2 \times 9}{6 \times 16} = \frac{18}{96}$$

Step 3. Simplify the fraction:

$$\frac{18}{96} = \frac{6}{32} = \frac{3}{16}$$

Divided by 3 | Divided by 2



Multiplying Mixed Numbers

Rule #1 - First, convert the mixed number to an improper fraction * next, multiply the numerators together and then multiply the denominators together * then, convert the answer back to a mixed number and reduce.

$$6\frac{2}{4} \times \frac{3}{5} = \rightarrow 6\frac{2}{4} = \frac{26}{4} \rightarrow \frac{26}{4} \times \frac{3}{5} =$$

$$\frac{26}{4} \times \frac{3}{5} = \frac{78}{20} \rightarrow 3\frac{18}{20} \text{ reduce } \frac{18 \div 2}{20 \div 2} = \boxed{3\frac{9}{10}}$$

Multiplying mixed numbers

$$4\frac{1}{3} \times 3\frac{2}{5}$$

$$\frac{13}{3} \times \frac{17}{5}$$

$$\frac{13 \times 17}{3 \times 5}$$

$$\frac{221}{15} = 14\frac{11}{15}$$

1) Convert mixed numbers to improper fractions.

2) Multiply the numerators of two fractions.

3) Multiply the denominators of the two fractions.

4) Simplify the answer to its simplest form.

5) Convert the improper fraction into a mixed number

Ex.

a) $2\frac{3}{4} \times \frac{1}{2} = \frac{11}{4} \times \frac{1}{2} = \frac{11 x 1}{4 x 2} = \frac{11}{8} = 1\frac{3}{8}$

b) $1\frac{2}{3} \times 3\frac{3}{10} = \frac{5}{3} \times \frac{33}{10} = \frac{165}{30} = 5\frac{1}{2}$

c) $3\frac{6}{8} \times 4\frac{12}{15} = 3\frac{3}{4} \times 4\frac{4}{5} = \frac{15}{4} \times \frac{24}{5} = \frac{\overset{3}{\cancel{15}} x \overset{6}{\cancel{24}}}{\underset{1}{\cancel{4}} x \underset{1}{\cancel{5}}} = \frac{18}{1} = 18$



3) Rewrite the mixed numbers as improper fractions, then simplify before you multiply.

a) $3\frac{3}{4} \times 4\frac{4}{3}$ = ……………………………..

b) $2\frac{1}{2} \times 3\frac{4}{5}$ = ………………………………

c) $3\frac{3}{4} \times 3\frac{2}{2}$ = ………………………………

d) $1\frac{1}{2} \times 3\frac{1}{2}$ = ………………………………

e) $1\frac{3}{4} \times 1\frac{2}{4}$ = ………………………………

f) $3\frac{1}{3} \times 1\frac{4}{10}$ = ………………………………

g) $3\frac{1}{3} \times 4\frac{1}{5}$ = ……………………………….

h) $5\frac{2}{4} \times 2\frac{6}{11}$ = ………………………………

i) $10\frac{2}{5} \times 4\frac{3}{8}$ = ………………………………

j) $3\frac{2}{3} \times 1\frac{1}{2}$ = ………………………………..

k) $1\frac{8}{12} \times 1\frac{2}{10}$ = ………………………………

l) $2\frac{1}{5} \times 2\frac{3}{11}$ = ………………………………..



Lesson 8

Story Problems Involving Multiplication of Fractions and Mixed Numbers.



15 minutes = $\frac{1}{4}$ hour

30 minutes = $\frac{1}{2}$ hour

45 minutes = $\frac{3}{4}$ hour

1) Soha purchased a bag of onions from the market that has a mass of $2\frac{1}{4}$ Kilograms. Her brother, Saif purchased a bag of carrots that has a Mass $1\frac{3}{5}$ times more than Soha's bag of onions. what is the mass of saif's bag of carrots?

………
………
………

2) Malek lives $\frac{3}{4}$ km far from school. Nada lives $1\frac{1}{2}$ times as far away from school as Malek. How far from school does Nada live?

………
………
………

3) Carla's dad said he will give her $5\frac{1}{3}$ L.E. If she works one hour. How much will he give her for 3 hours and 30 minutes?

………
………
………



4) Hana is $3\frac{4}{5}$ years old. She has spent $\frac{1}{5}$ of her life sleeping or crying.

How much of her life has Hana spent either sleeping or crying in years?

………
………
………

5) A cyclist is riding with speed of $7\frac{1}{4}$ m per hour. find the distance find the distance he covers in $5\frac{1}{2}$ hours.

………
………
………

6) Each cup of brown sugar that Sharon uses to make caramel cinnamon buns is accompanied by $\frac{1}{4}$ of cup of white sugar. How many cups of white sugar is required for $5\frac{1}{2}$ cups of brown sugar?

………
………
………

7) Amy ate half a pizza. Her sister ate $2\frac{1}{4}$ times more than Amy did. How much pizza did Amy's sister eat?

………
………
………



Lesson 9

Fractions as Division

- **Fractions represent division of whole numbers**

  Ex: $2 \div 3 = \frac{2}{3}$

- **In fractions the order is important**

  Ex: $4 \div 5 = \frac{4}{5}$ **but** $5 \div 4 = \frac{5}{4} = 1\frac{1}{4}$

$\frac{4}{5} \neq \frac{5}{4}$ **(Division is not commutative)**

Complete the following table:

Expression	Quotient	Division algorithm
$6 \div 5$	$\frac{6}{5} = 1\frac{1}{5}$	$5\overline{)6}$ with quotient $1\frac{1}{5}$: $6 - 5 = 1$
$7 \div 3$		
$8 \div 5$		
$6 \div 4$		



Complete the following table:

Expression	Quotient	Division algorithm
$7 \div 4$		
$9 \div 4$		
$8 \div 3$		
$5 \div 4$		
$7 \div 5$		
$4 \div 3$		
$6 \div 3$		



Lesson 10

Story problems

Solve the following:

1) A mother baked 22 chocolate cupcakes, If the cupcakes are shared equally among her 6 children, what is the share of each child?

………
………
……..

2) Sara bought 12 m of fabric to make curtains, if she wants to make 8 equal curtains, what is the length of each curtain?

………
………
……..

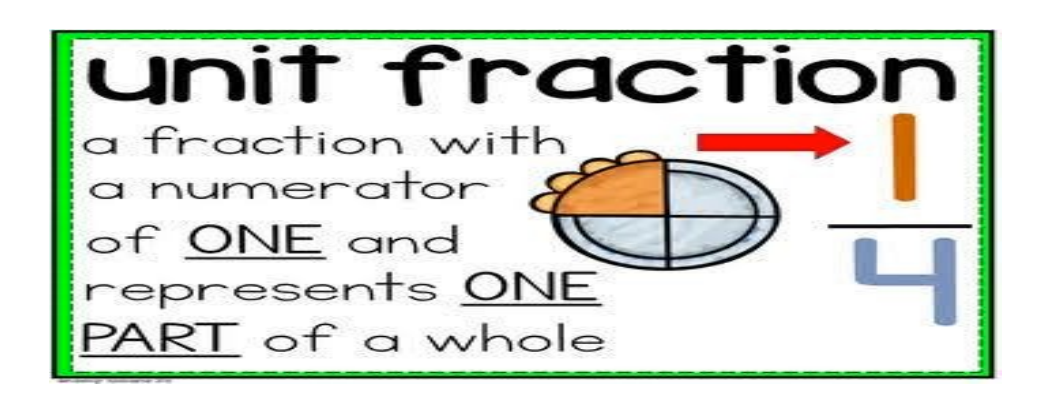
3) After a football training session there are 24 footballs to tidy away, each bag holds 8 balls. How many bags will the footballers need?

………
………
……..



Lesson 11

Dividing Unit Fractions by Whole Numbers



Ex: $\frac{1}{3} \div 5 = \quad \frac{1}{15}$

$\frac{1}{3}$					$\frac{1}{3}$					$\frac{1}{3}$				
$\frac{1}{15}$	$\frac{1}{15}$	$\frac{1}{15}$	$\frac{1}{15}$	$\frac{1}{15}$										

Solve the following:

a) $\frac{1}{4} \div 4 =$………………….

b) $\frac{1}{6} \div 2=$………………….

c) $\frac{1}{3} \div 8 =$………………….

d) $\frac{1}{7} \div 2 =$………………….

e) $\frac{1}{2} \div 5 =$………………….

f) $\frac{1}{4} \div 7 =$………………….

g) $\frac{1}{6} \div 6 =$………………….

h) $\frac{1}{9} \div 3 =$………………….

i) $\frac{1}{5} \div 7 =$………………….

j) $\frac{1}{7} \div 4 =$………………….

k) $\frac{1}{2} \div 6 =$………………….

l) $\frac{1}{8} \div 8 =$………………….



Solve the following:

a) $\frac{1}{3} \div a = \frac{1}{18}$ $\frac{1}{3} \times b = \frac{1}{18}$ a = ……6…… , b = ……$\frac{1}{6}$……

b) $\frac{1}{5} \div a = \frac{1}{15}$ $\frac{1}{5} \times b = \frac{1}{15}$ a = ……….. , b = ………..

c) $\frac{1}{6} \div a = \frac{1}{36}$ $\frac{1}{6} \times b = \frac{1}{36}$ a = ……….. , b = ………..

d) $\frac{1}{4} \div a = \frac{1}{24}$ $\frac{1}{4} \times b = \frac{1}{24}$ a = ……….. , b = ………..

e) $\frac{1}{3} \div a = \frac{1}{24}$ $\frac{1}{3} \times b = \frac{1}{24}$ a = ……….. , b = ………..

f) $\frac{1}{5} \div a = \frac{1}{35}$ $\frac{1}{5} \times b = \frac{1}{35}$ a = ……….. , b = ………..

g) $\frac{1}{9} \div a = \frac{1}{18}$ $\frac{1}{9} \times b = \frac{1}{18}$ a = ……….. , b = ………..

h) $\frac{1}{7} \div a = \frac{1}{49}$ $\frac{1}{7} \times b = \frac{1}{49}$ a = ……….. , b = ………..

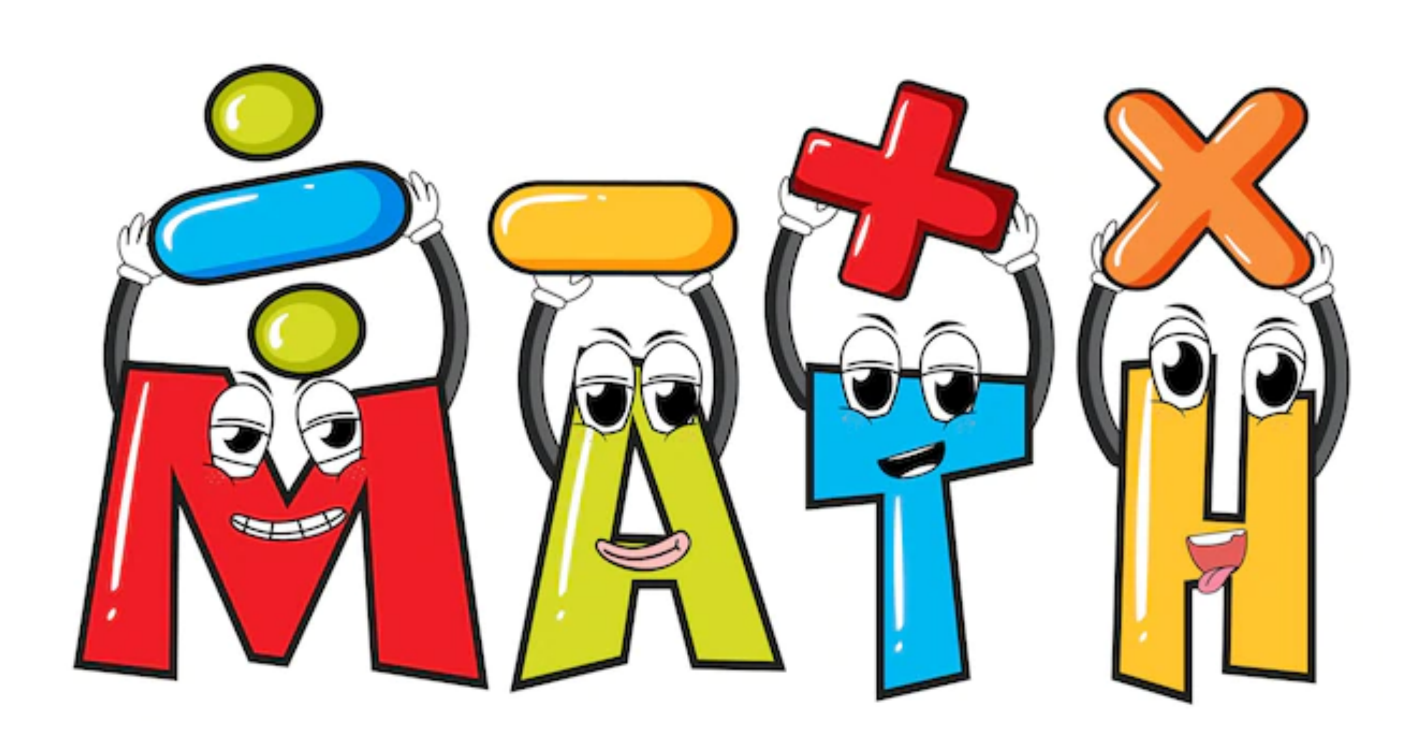


i) $\frac{1}{8} \div a = \frac{1}{56}$ $\frac{1}{8} \times b = \frac{1}{56}$ a = ………… , b = …………

j) $\frac{1}{10} \div a = \frac{1}{60}$ $\frac{1}{10} \times b = \frac{1}{60}$ a = ………… , b = …………

k) $\frac{1}{6} \div a = \frac{1}{24}$ $\frac{1}{6} \times b = \frac{1}{24}$ a = ………… , b = …………

l) $\frac{1}{10} \div a = \frac{1}{90}$ $\frac{1}{10} \times b = \frac{1}{90}$ a = ………… , b = …………





Lesson 12

Dividing Whole Numbers by Unit Fractions

Ex: $4 \div \frac{1}{3}$ = ………12……

1			2			3			4			
$\frac{1}{3}$	$\frac{1}{3}$	$\frac{1}{3}$	$\frac{1}{3}$	$\frac{1}{3}$	$\frac{1}{3}$	$\frac{1}{3}$	$\frac{1}{3}$	$\frac{1}{3}$	$\frac{1}{3}$	$\frac{1}{3}$	$\frac{1}{3}$	12

Solve the following:

a) $5 \div \frac{1}{3}$ = …………

b) $4 \div \frac{1}{2}$ = …………

c) $7 \div \frac{1}{8}$ = …………

d) $5 \div \frac{1}{3}$ = …………

e) $6 \div \frac{1}{4}$ = …………

f) $9 \div \frac{1}{9}$ = …………

g) $2 \div \frac{1}{4}$ = …………

h) $5 \div \frac{1}{7}$ = …………

i) $3 \div \frac{1}{3}$ = …………

k) $7 \div \frac{1}{6}$ = …………

l) $2 \div \frac{1}{6}$ = …………

m) $9 \div \frac{1}{5}$ = …………

n) $3 \div \frac{1}{7}$ = …………

o) $5 \div \frac{1}{6}$ = …………

p) $4 \div \frac{1}{4}$ = …………

q) $9 \div \frac{1}{6}$ = …………

r) $6 \div \frac{1}{8}$ = …………

s) $10 \div \frac{1}{3}$ = …………



Solve the following:

a) $5 \div a = 15$, $5 \times b = 15$ a = ……… $\frac{1}{3}$ ……. , b = ……3…..

b) $3 \div a = 27$, $3 \times b = 27$ a = …………… , b = ……………

c) $6 \div a = 24$, $6 \times b = 24$ a = …………… , b = ……………

d) $5 \div a = 35$, $5 \times b = 35$ a = …………… , b = ……………

e) $7 \div a = 28$, $7 \times b = 28$ a = …………… , b = ……………

f) $2 \div a = 12$, $2 \times b = 12$ a = …………… , b = ……………

g) $4 \div a = 16$, $4 \times b = 16$ a = …………… , b = ……………

h) $3 \div a = 21$, $3 \times b = 21$ a = …………… , b = ……………



i) $4 \div a = 8$, $4 \times b = 8$ a = …………… , b = ……………

j) $8 \div a = 64$, $8 \times b = 64$ a = …………… , b = ……………

k) $10 \div a = 60$, $10 \times b = 60$ a = …………… , b = ……………

l) $4 \div a = 36$, $4 \times b = 36$ a = …………… , b = ……………

Solve the following:

a) $8 \div a = 32$, $8 \times b = 32$ a = …………… , b = ……………

b) $\frac{1}{10} \div a = \frac{1}{30}$, $\frac{1}{10} \times b = \frac{1}{30}$ a = …………… , b = ……………

c) $\frac{1}{4} \div a = \frac{1}{28}$, $\frac{1}{4} \times b = \frac{1}{28}$ a = …………… , b = ……………

d) $7 \div a = 63$, $7 \times b = 63$ a = …………… , b = ……………

e) $8 \div a = 48$, $8 \times b = 48$ a = …………… , b = ……………



f) $\frac{1}{3} \div a = \frac{1}{12}$, $\frac{1}{3} \times b = \frac{1}{12}$ a = …………… , b = ……………

g) $4 \div a = 40$, $4 \times b = 40$ a = …………… , b = ……………

h) $6 \div a = 24$, $6 \times b = 24$ a = …………… , b = ……………

i) $\frac{1}{2} \div a = \frac{1}{12}$, $\frac{1}{2} \times b = \frac{1}{12}$ a = …………… , b = ……………

j) $\frac{1}{7} \div a = \frac{1}{28}$, $\frac{1}{7} \times b = \frac{1}{28}$ a = …………… , b = ……………

k) $4 \div a = 16$, $4 \times b = 16$ a = …………… , b = ……………

l) $5 \div a = 45$, $5 \times b = 45$ a = …………… , b = ……………

m) $\frac{1}{2} \div a = \frac{1}{16}$, $\frac{1}{2} \times b = \frac{1}{16}$ a = …………… , b = ……………



Lesson 13

Story problems

1) A baker is making croissants, He has 18 kg of dough, each croissant is made of $\frac{1}{6}$ kg of dough, how many croissants can he make?
……
……
………

2) The kitchen assistant is helping the chef to serve soup, the assistant is putting $\frac{1}{15}$ cups of cream on top of the soup in each bowl. If he had 3 cups of cream. How many bowls can he serve?
……
……
………

3) A juice bottle can hold $\frac{1}{2}$ of a liter. How many glasses of juice can be filled with a 4-liter bottle?
……
……
………

4) Omar's family eats $\frac{1}{3}$ of a packet of biscuits every day, how long will 27 packets last the family?
……
……
………

5) 4 children share $\frac{1}{2}$ of a pizza, what fraction do they each eat?
……
……
………



Unit 10

Two-Dimensional Plane Figures and Coordinate Planes

Lesson 1

Categories of Shapes

Q1: Use the list of quadrilaterals to fill in the chart.

Rectangle Parallelogram Rhombus

Square Trapezium Kite

Quadrilaterals
(4-sided polygons)

Types of sides

Exactly 1 pair of parallel sides
1. ______

2 pairs of parallel sides opposite each other
2. ______

2 pairs of adjacent sides that are congruent
3. ______

Types of angles

4 right angles
4. ______

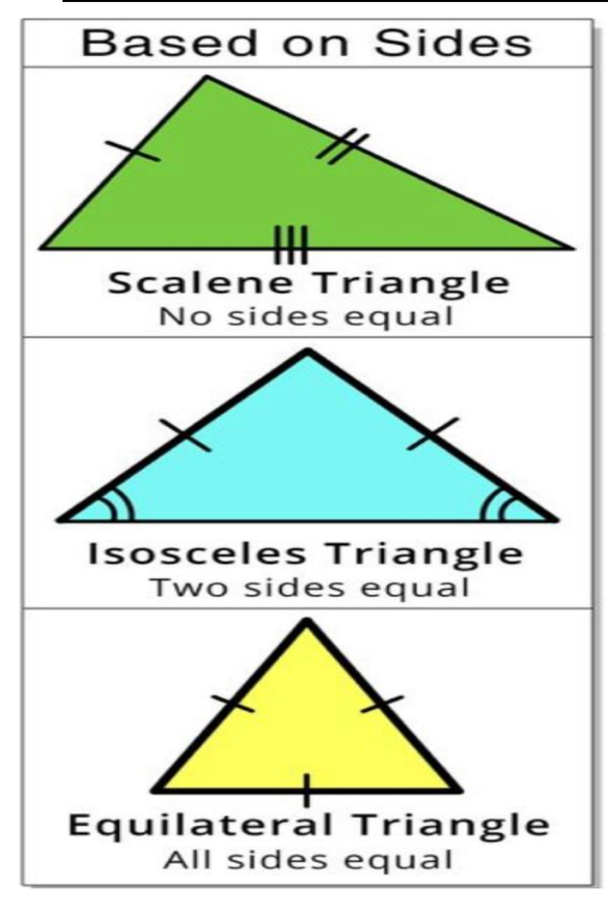
2 acute angles and 2 obtuse with four congruent sides
5. ______

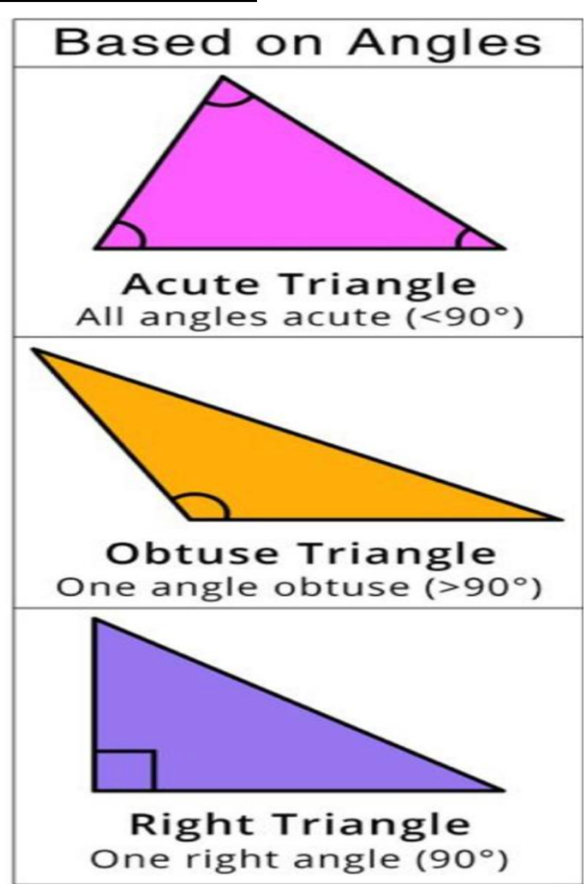
4 right angles
4 congruent sides
6. ______



Lesson 2
Tricky Triangles

Types of triangles according to sides and angles:





Sum of interior angles of any triangle = 180°

Fill in the blanks:

a) A ………………………………………. Triangle has no equal sides.

b) A ………………………………………. Triangle has one 90° angle.

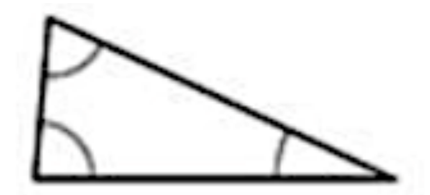
c) An ………………………………………. Triangle has three angles less than 90°

d) An ………………………………………. Triangle has two equal sides.

e) An ………………………………………. Triangle has one angle more than 90°



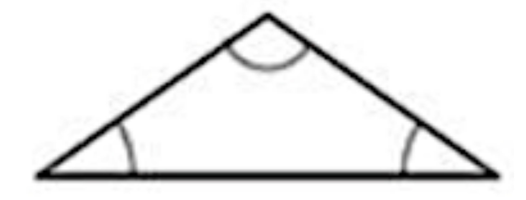
Complete the following:



This type of triangle is ……………..…….

……………..……. of the sides are the same length

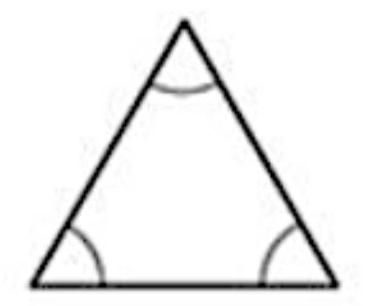
……………..……. of the angles are the same size



This type of triangle is ……………..…….

……………..……. of the sides are the same length

……………..……. of the angles are the same size



This type of triangle is ……………..…….

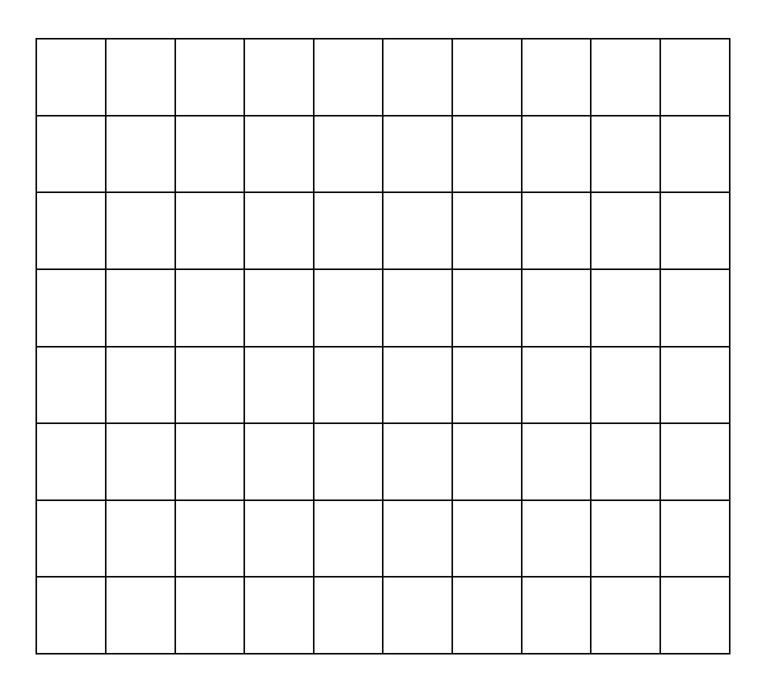
……………..……. of the sides are the same length

……………..……. of the angles are the same size



Lesson 3
Using Tiling to Calculate Area

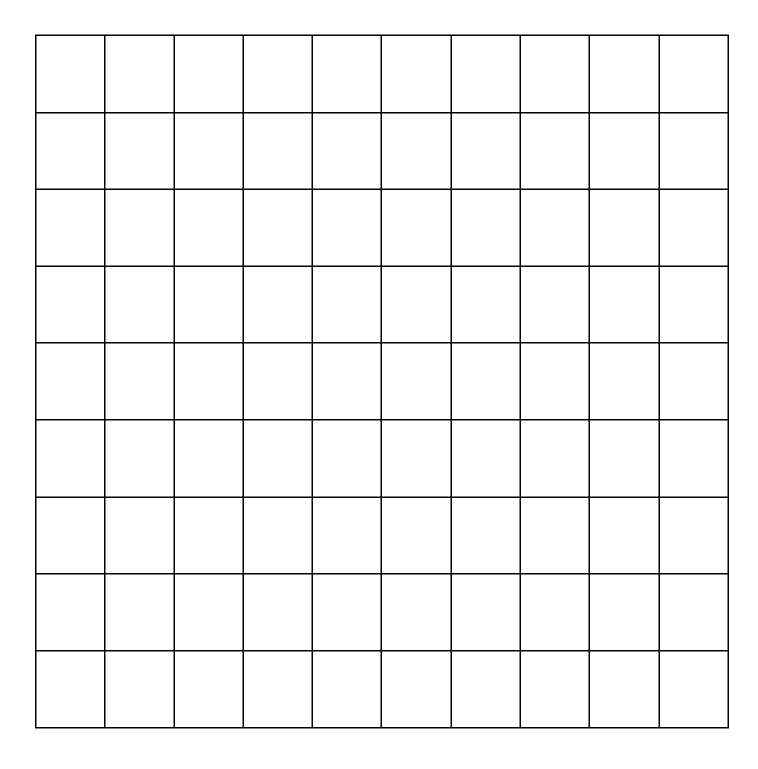
Draw a rectangle with an area of 18 square units.



Draw a rectangle with dimensions $3\frac{1}{2}$ units $\times$ $2\frac{1}{2}$ units . Then, calculate its area.



Draw a rectangle with dimensions $5\frac{1}{2}$ units $\times$ $4\frac{1}{2}$ units . Then, calculate its area.

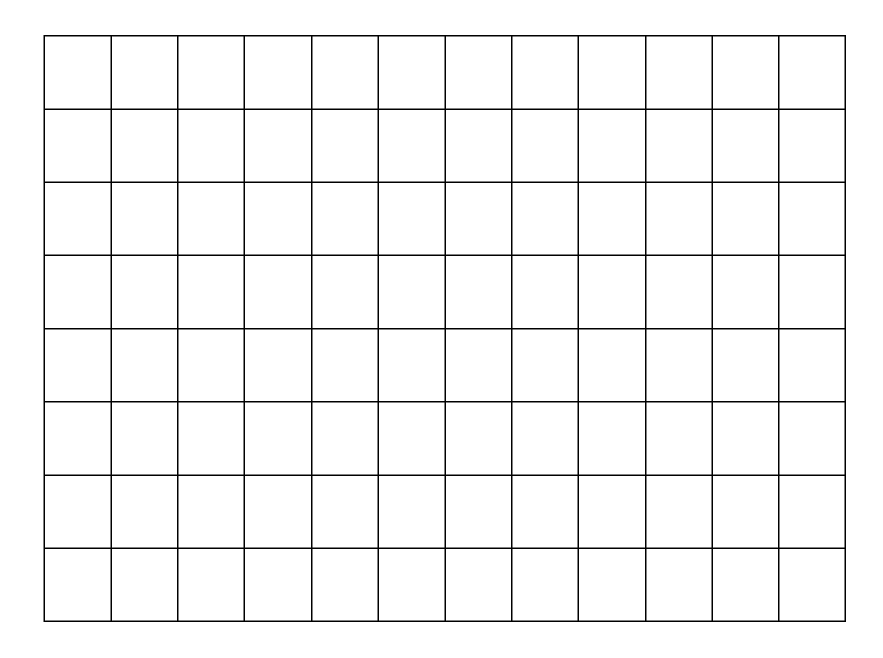


Draw a rectangle with dimensions $6\frac{1}{2}$ units $\times$ $3\frac{1}{2}$ units . Then, calculate its area.

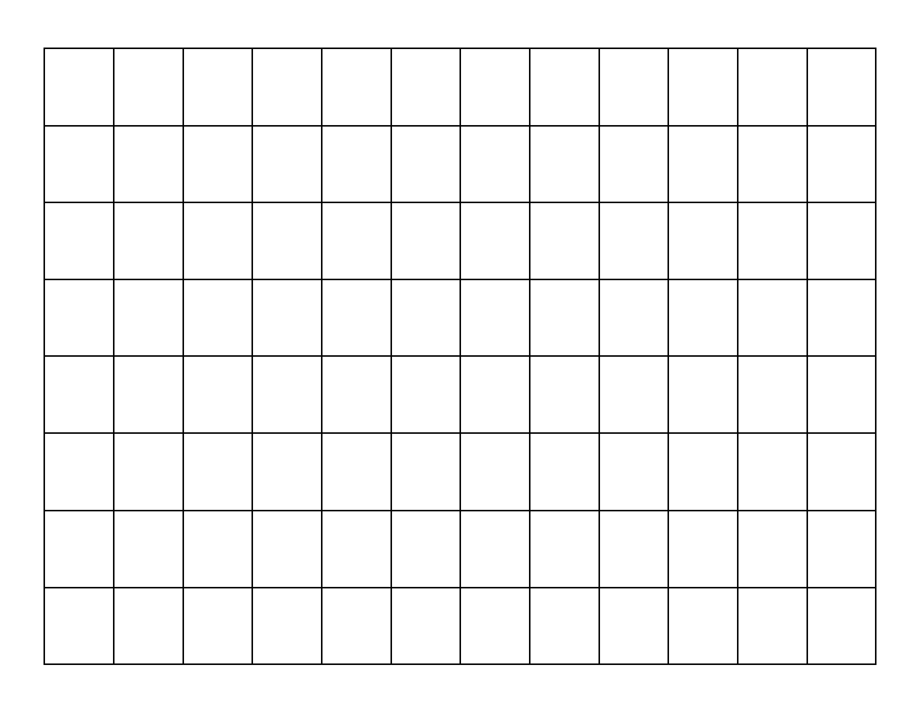


Lesson 4
Calculating Area with Fractional Dimensions

Q1: Draw a model for rectangle with dimensions $4\frac{1}{4}$ meters × $5\frac{1}{2}$ m . Then, calculate and record its area.



Q2 : Draw a model for rectangle with dimensions $3\frac{1}{2}$ meters × $10\frac{3}{4}$ m . Then, calculate and record its area .





Lesson 5
Applying the Area Formula

Q1 : Solve the following problems :

1. $2 \times \frac{1}{2} =$

2. $1\frac{1}{4} \times 3 =$

3. $\frac{3}{5} \times \frac{2}{9} =$

4. $2\frac{3}{4} \times 1\frac{1}{8} =$

5. $\frac{7}{8} \times \frac{5}{9} =$

6. $4\frac{3}{7} \times 2\frac{1}{8} =$

7. $3\frac{1}{8} \times \frac{1}{8} =$

8. $5\frac{2}{3} \times 2\frac{1}{3} =$

Q2: Solve each problem. Be sure to simplify all fractions and mixed numbers.

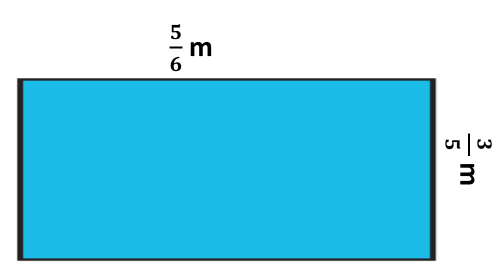
a) Yassin has a herb garden with 8 units long by $\frac{3}{4}$ unit. wide. What is the area of Yassin's herb garden?



$\frac{3}{4}$ unit



b) What is the area of the rectangle shown?



c) Omar owns a bookstore. The store is 5 meters long and $3\frac{1}{2}$ m. wide. What is the area of the store?

Q3 : Solve the following problems :

d) $3 \times \frac{1}{4} =$

e) $2\frac{1}{3} \times 5 =$

f) $\frac{2}{7} \times \frac{1}{3} =$

a) $1\frac{3}{7} \times 3\frac{1}{8} =$

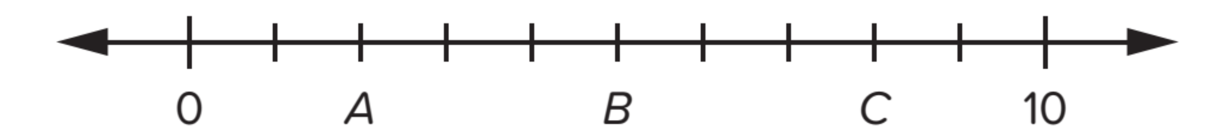
b) $3\frac{1}{5} \times \frac{1}{5} =$

c) $4\frac{2}{3} \times 4\frac{1}{6} =$



Lesson 6
Introduction to Coordinate Planes

Q1: Use the number line to answer the questions.

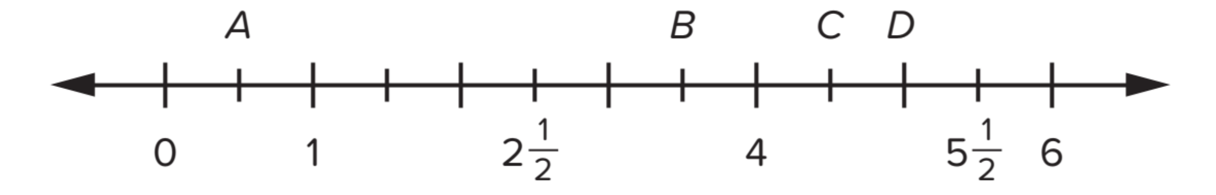


a) **What is the value of B?**

b) **What is the value of A?**

c) **What is the value of C?**

Q2: Use the number line to answer the questions.



a) **What is the value of B?**

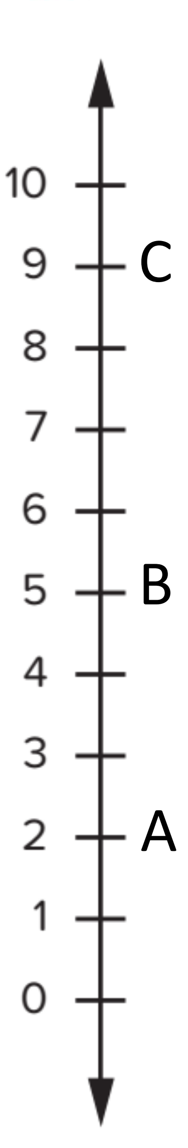
b) **What is the value of A?**

c) **What is the value of C?**

d) **What is the value of D?**



Q3: Use the number line to answer the questions.



a) **What is the value of B?**

b) **What is the value of A?**

c) **What is the value of C?**

d) **How far is point C from point A?**

e) **How far is point B from point A?**





LESSON 7
Plotting Points on a Coordinate Plane

origin

- The point where the x-axis and the y-axis intersect at (0,0). It is labeled as O.

x-axis

- The horizontal number line on a coordinate plane

y-axis

- The vertical number line on a coordinate plane.

ordered pair

- A pair of numbers used to locate any point on a coordinate plane. Ordered pairs are written left to right – (x, y).

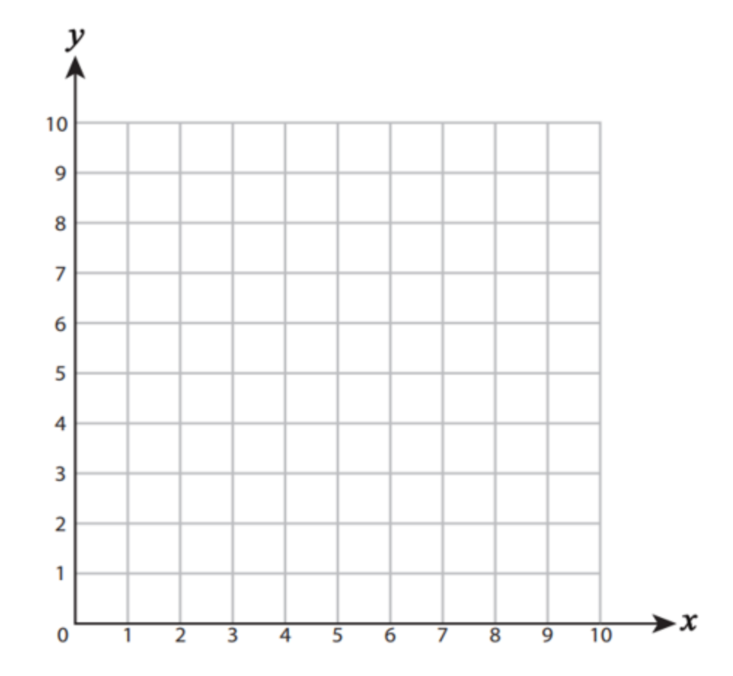
X-coordinate

- The first number in an ordered pair, which tells how far to move left or right from the origin. It is labeled as x.

Y-coordinate

A) Plot each point on the coordinate grid.

1) T(3, 3)
2) S(1, 8)
3) H(2, 8)
4) E(6, 2)
5) R(5, 4)
6) L(7, 6)
7) M(3, 1)
8) V(9, 5)
9) P(7, 1)
10) A(4, 7)





Ordered Pairs

y

10 9 8 7 6 5 4 3 2 1

0 1 2 3 4 5 6 7 8 9 10

x

A) Write the ordered pair for each item.

1) ____________

2) ____________

3) ____________

4) ____________

5) ____________

B) Write the item located at each ordered pair.

6) (2, 2) ____________

7) (9, 7) ____________

8) (2, 7) ____________

9) (6 , 8) ____________

10) (5 , 2) ____________



Lesson 8

Coordinate Designs

What is a coordinate design?

Coordinate designs are **those that go with or complement the main design**. They are intended to be used with the main design as part of a range yet they are a design in their own right.

How do you create coordinates?

First, we draw two number lines perpendicular to one another, intersecting at the point 0 on both lines. Then, we simply label the horizontal number line as the x-axis and label the vertical number line as the y-axis. There we have it! Our coordinate plane has been created.

Plotting ordered pairs on a coordinate plane to create a picture.

Exercises: -

Plot the points on the coordinate grid.

1. A(4,3) B(4,6) C(7,6) D(7,3)

2. Connect the points in order. What polygon did you create?

……………………………………………………………….



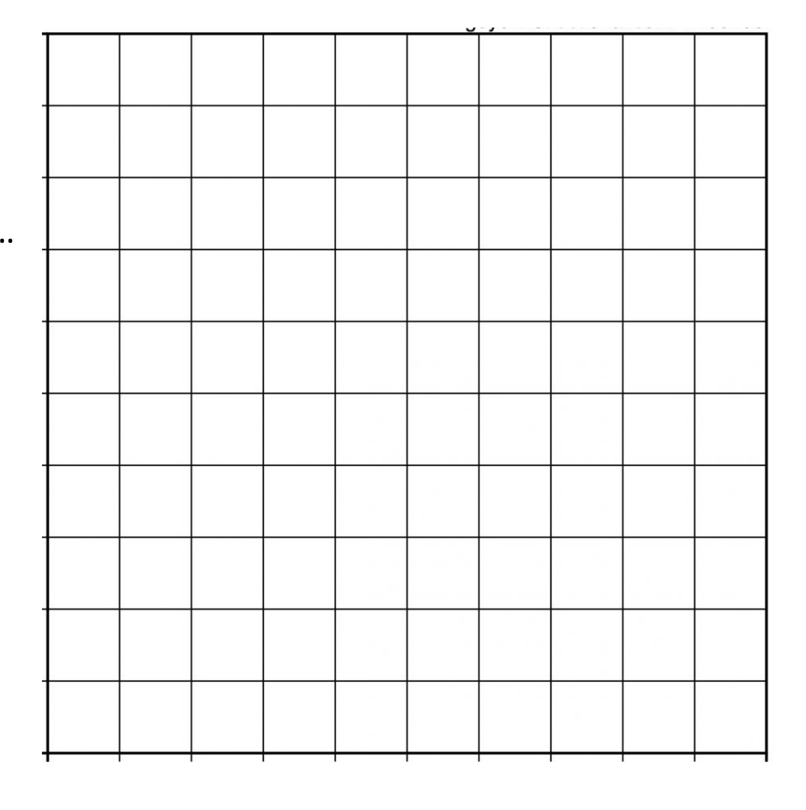
Plot the points on the coordinate grid.

1. O (2,1) X (2,6) Y (5,6) Z (5,1)

2. Connect the points in order.

What polygon did you create?

……………………………………………………………



---

a) Record the ordered pairs for points.

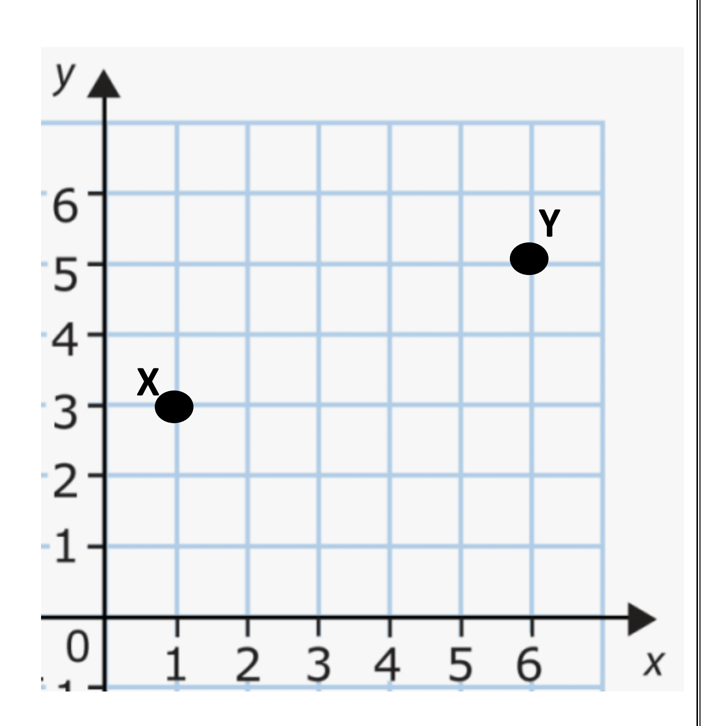
X and **Y** on the coordinate plane.

……………………………………………………….

b) Draw a line connecting the two points.

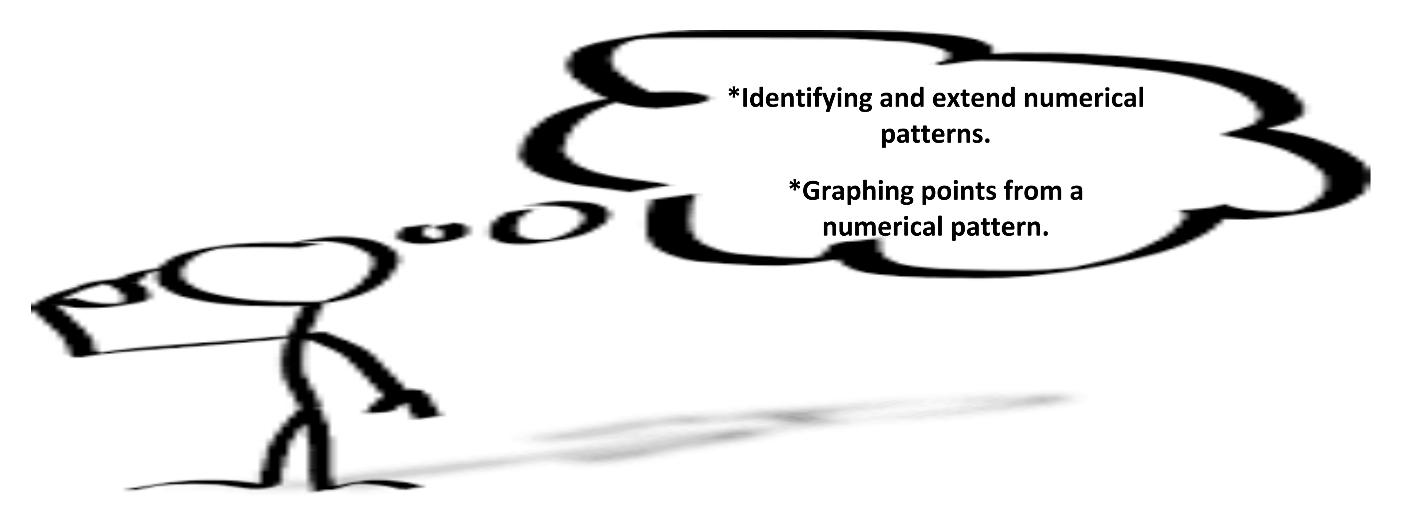
c) Place a coordinate point **Z** to create a **right triangle** with the right angle at point **Z**.

Record the ordered pair on the coordinate plane.





LESSON 9: - From Patterns to Points



Recognize and describe other **patterns** in **mathematics**. ... Use the spreadsheet to graph the data in the table and verify that the **points**.

Exercises: -

- Look at the table and fill in the missing **y**
- Graph the coordinate points from the table

x	1	2	3	4
y	$\frac{1}{2}$	2	$3\frac{1}{2}$	



Lesson10: Graphing Real-World Data

Graphing the Length and Width of Rectangles The length of a rectangle is twice its width, in centimeters. This information can be represented by the rule, Length (L)= 2 × Width (w) .

1. Use the pattern to complete the table.

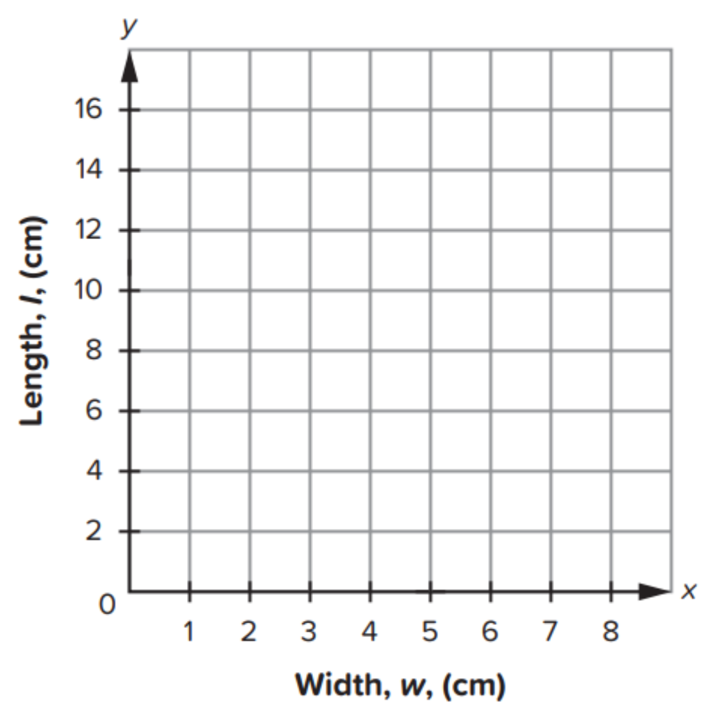
Width, w (cm)	1	2	A	5	C	8
Length, $l = 2w$ (cm)	2	4	8	B	12	D

2. Using the Width data as x-coordinates and the Length data as y-coordinates, plot the data on the coordinate grid. Then, draw a line to connect the points.

3. The width of the rectangle is 7 centimeters.
The length is …………. cm.

4. The width of the rectangle is 3.5 centimeters.
The length is …………..cm.

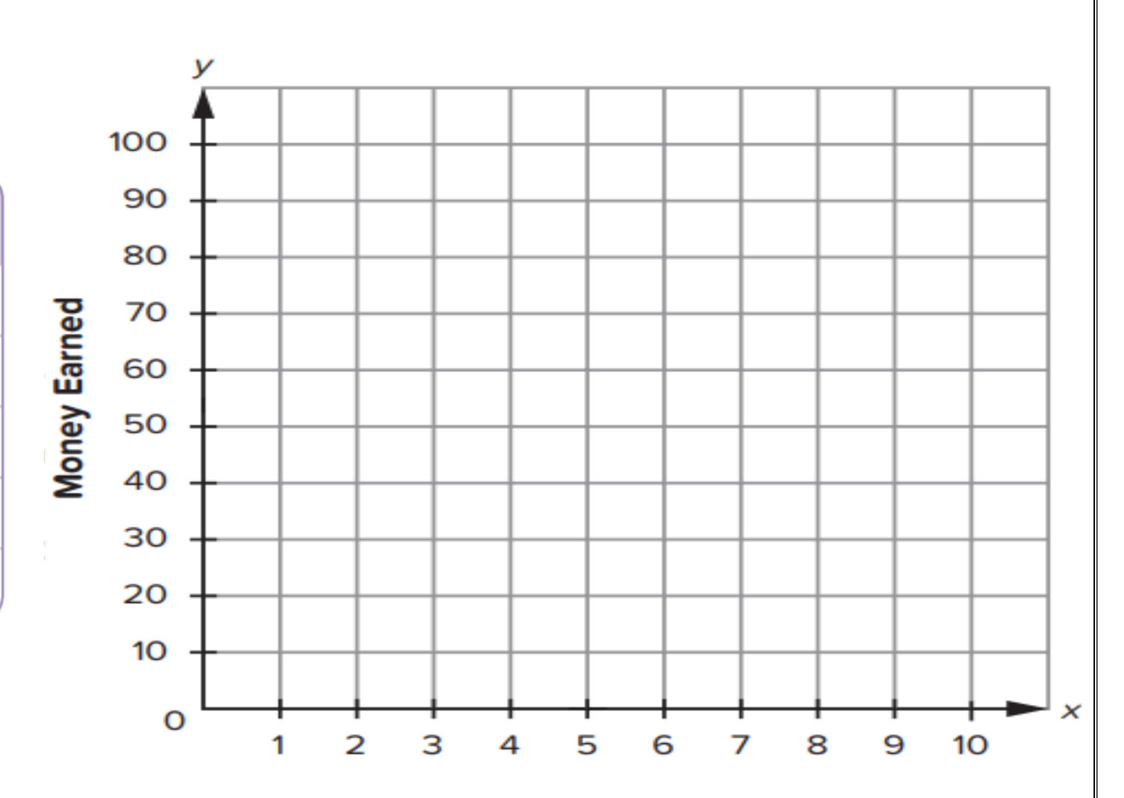
5. The length of the rectangle is 8 centimeters.
The width is ………….. cm.
6. The length of the rectangle is 12 centimeters.
The width is …………… cm.





1. Maha is selling bags of cookies in her neighborhood to make extra money to buy a new bike. She earns 10 LE for each bag of cookies she sells. Complete the table and then graph the points on the coordinate grid.

Bags of Cookies	Money Earned LE
2	
4	
7	
8	
10	







LESSON 11 Interpreting Real-World Graphs

1) Mounir sells dates at a local market. Each case contains one dozen dates. On Day 1 he had 30 cases to sell. This graph shows how many cases he had at the beginning of each day. Use the coordinate grid to answer the questions.

Mounir's Date Shop

y

Cases Remaining

32 30 28 26 24 22 20 18 16 14 12 10 8 6 4 2 0

1 2 3 4 5 6 7 x

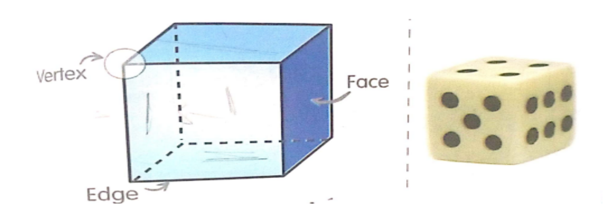
Days

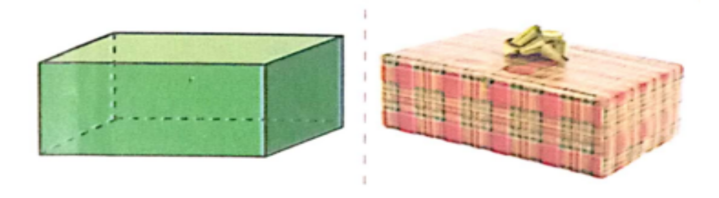
1. Why are the y values decreasing on the graph?
2. What does the ordered pair (2, 27) mean?
3. On which day did Mounir sell the most dates? How do you know?
4. How many dates did Mounir have left to sell on Day 7?
5. How many individual dates has Mounir sold from Days 1 through 7?
6. Why do you think the line drops so sharply from Days 3 to 5?
7. What is one more question that could be answered from this graph



Unit 11

Volume
Concept 1 Understanding Volume and Capacity
Lesson 1 Multiple dimensions

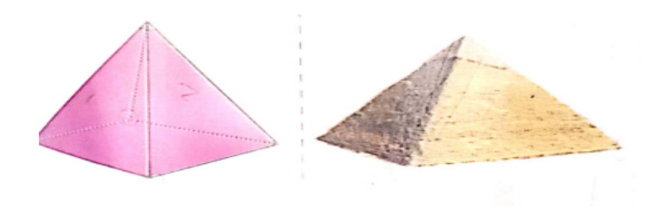


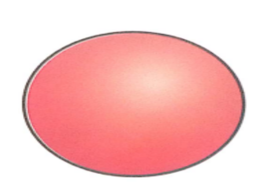


The cube has:
- 8 vertices
- 12 edges
- 6 flat faces

Each face is a square
All faces have the same area
area

The rectangular prism (Cuboid) has :
8 vertices
12 edges
6 flat faces
Each face is a rectangle or a square.
Each two opposite faces have same





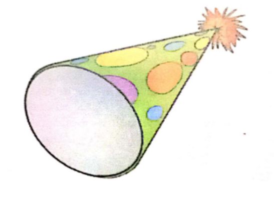


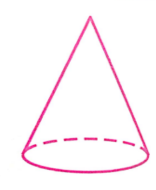
The square-based Pyramid has:
- 5 vertices
- 8 edges
- 5 faces

1 square flat face (base) And 4 triangular flat faces

The sphere has:
No vertices
No edges
No flat faces
1 curved face











The cone has:

- **1 Vertex**
- **No edges**
- **1 circular flat face base**

The cylinder has:

No vertices

No edges

2 circular flat faces

1 curved face

Complete:

1) The number of edges of the rectangular prism is ………………..

2) The number of vertices of the cube is ……………………………..

3) The faces of the cube are …………… in area

4) The number of edges of cylinder ……………….

5) The number of edges of a cube is ………………..

6) The three-dimensional shape which has no vertices ……………….. and …………………..

7) The cube has …………. faces, each face is a ……….. and each two opposite faces are ……….. in area.

8) The …………………….. has no flat faces

9) The ………………………. has 5 vertices.

10) the cuboid has …………………… faces



Lesson 2

Measuring a New Dimension

Drawing 3-dimensional

Draw a design of volume.

a) **4 cube units**

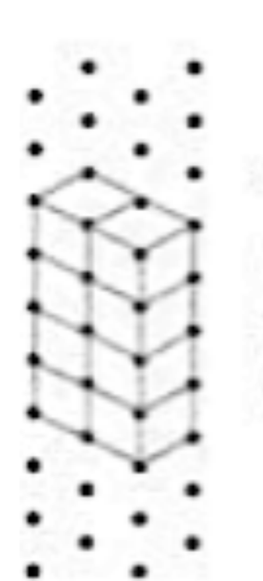
b) **5 cube units**

c) **10 cube units**



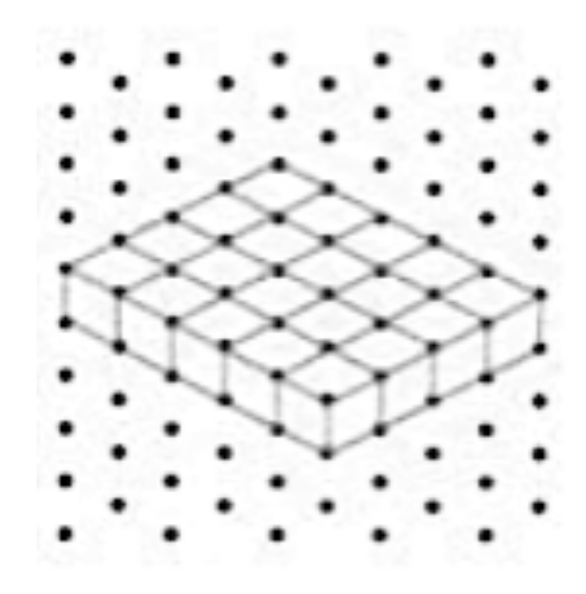
Complete the following :

a)



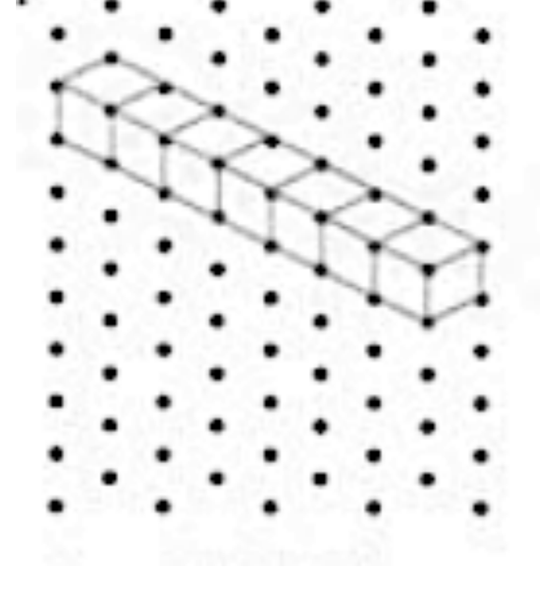
- …………… cube high
- …………… cube long
- …………… cube wide
- Volume = …………… cubes

b)



- …………… cube high
- …………… cube long
- …………… cube wide
- Volume = …………… cubes

c)



- …………… cube high
- …………… cube long
- …………… cube wide
- Volume = …………… cubes



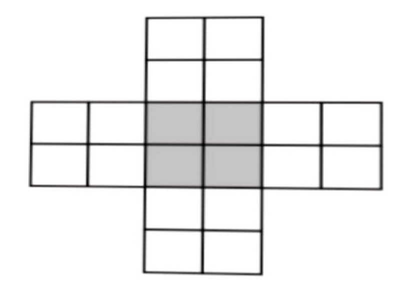
Lesson 3

Estimating and Measuring Volume

- **Estimate the volume of rectangular prisms in unit cubes.**
- **Use the unit cubes to measure the volume of rectangular prisms.**

Exercises:

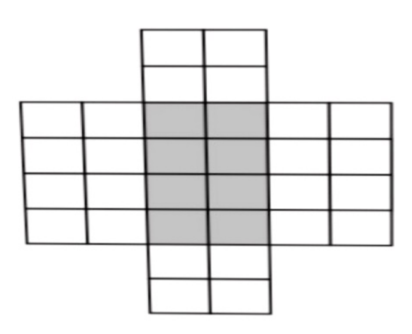
1)



Estimated volume: …………………………………………… cubic centimeters.

Actual volume: ………………………………………………… cubic centimeters.

2)



Estimated volume: …………………………………………… cubic centimeters.

Actual volume: ………………………………………………… cubic centimeters



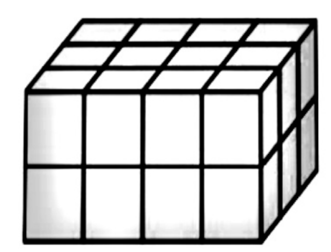
Lesson 4

Same Volume, Different Shape

Exercises:

1) use unit cubes to build the figure shown, if needed, and then fill in the missing information:

a)

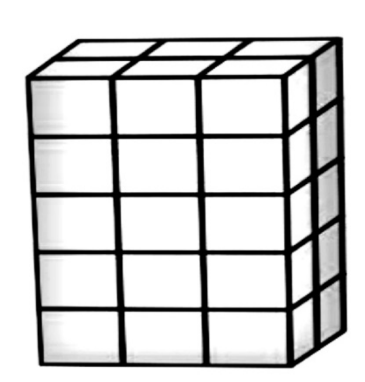


Number of horizontal layers: ………………………..

Number of cubes in each horizontal layer: ……………………

Volume: ………………….. cm^3

b)



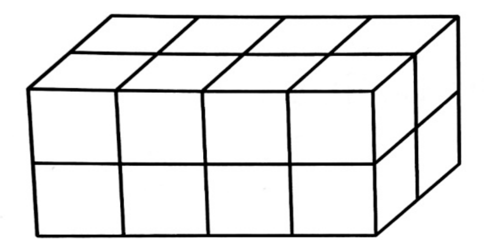
Number of horizontal layers: ………………………..

Number of cubes in each horizontal layer: ……………………

Volume: ………………….. cm^3



c)

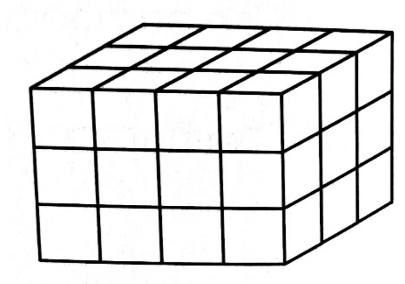


Number of horizontal layers: ………………………..

Number of cubes in each horizontal layer: ………………

Volume: ………………….. cm^3

d)

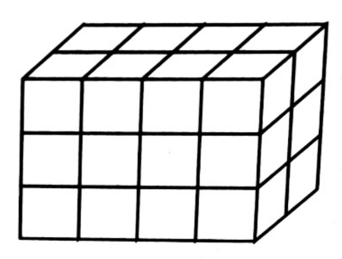


Number of horizontal layers: ……………………….

Number of cubes in each horizontal layer: ……………………

Volume: …………………. cm^3

e)



Number of horizontal layers: ………………………..

Number of cubes in each horizontal layer: ……………………..

Volume: ………………….. cm^3



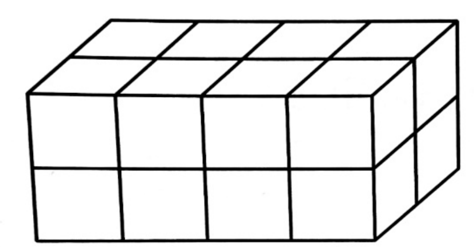
Lesson 5

Finding a Formula

Volume of rectangular prism (cuboid)

. volume = length x width x height

. volume = base area x height

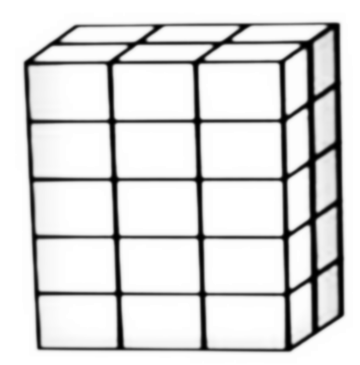


1) Label the dimension of the rectangular prism. each cube is 1 centimeter on all side.

Length: ……………………………..…cm
Width: ………………………………...cm
Height: ……………………………….cm

2)

a) Record the dimensions of the given rectangular prism and then find the volume.



length: ………………………….cm

width: ……………………………cm

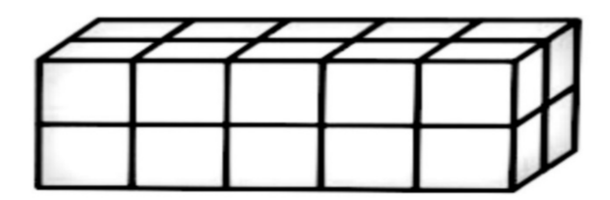
height: ……………………………cm

volume: ………………………… cm^3

b) using the dimensions of the rectangular prism in the previous task. write a multiplication expression that generates the given volume then find the product.



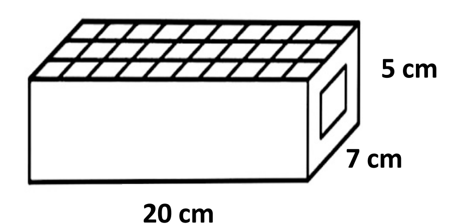
3) Consider the dimensions of the rectangular prism would give the volume of the rectangle prism.



<u>Choose:</u>

a) 7 +2 because the area of the prism base is 5+2 =7 cubic units and the height is 2 cubic units.
b) 10 + 2 because the area of the prism base is 5 x 2 = 10 cubic units and height is 2 cubic units.
c) 10 x 2 because the area of the prism base is 5 x 2 = 10 cubic units and height is 2 cubic units.

4) Which equation could be used to find the volume V?



<u>Choose:</u>

a) (20 + 7) x 5 = V

b) (5 + 7) + 20 = V

c) (20 x 7) x 5 = V

d) (5 x 7) + 20 = V



Solve the next questions:

1) Find the volume of the rectangular prism its dimensions are 4 cm, 5cm, 3 cm?

   ……………………………………………………………………………………………………

   ……………………………………………………………………………………………………

2) Find the volume of the rectangular prism its base area is 12 cm^2 and its height is 10 cm?

……………………………………………………………………………………………………

……………………………………………………………………………………………………

3) Find the volume of the rectangular prism its length is 12 cm, width is 3 cm , height is 3 cm?

……………………………………………………………………………………………………

……………………………………………………………………………………………………

4) Find the volume of the rectangular prism its base area is 30 cm and its height is 5 cm?

……………………………………………………………………………………………………

……………………………………………………………………………………………………

5) Find the volume of the rectangular prism its base area is 15 cm and its height is 2 cm?

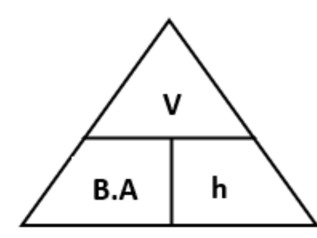
……………………………………………………………………………………………………

……………………………………………………………………………………………………



Lesson 6
Using a Formula to find Volume.

Volume = Base Area X Height

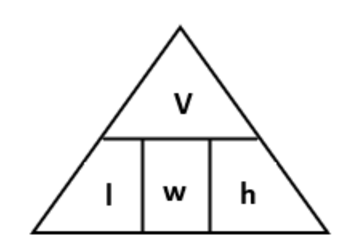


$V = B.A \times h$

$B.A = \frac{V}{h}$

$h = \frac{V}{B.A}$

Volume = Length X width X height



$l = \frac{V}{w \times h}$

$w = \frac{V}{l \times h}$

$h = \frac{V}{l \times w}$

A . Find the volume of each prism. Record your equation and the total volume

Equation: ____________________

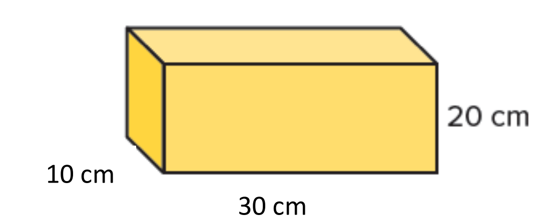
Volume: ____________________



30 cm

Equation: ____________________

Volume: ____________________



10 cm

30 cm



Volume: ____________________

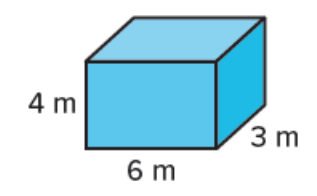


2 m

15 m

Equation: ____________________

Volume: ____________________





B. Complete

Dimensions of cuboid (cm)			Base area (cm^2)	Volume (cm^3)
Length	Width	Height		
3	2	5	…………	…………
20	60	10	…………	…………
7	2	…………	…………	28
5	…………	…………	25	50
4	…………	2	12	…………
12	2	…………	…………	70

C. Complete

1) The volume of a rectangular prism whose dimensions 2 cm, 3 cm and 5 cm = ………… cm^3.

2) The dimension of a rectangular prism are 4 cm, 3 cm and 2 cm ,Then volume = ……… cm^3.

3) A cuboid of base area 6 cm^2 and height 10 cm, then its volume = …………………… cm^3

4) Volume of a cuboid if the area of the base 12 cm^2 and its height is 2 cm = ………… cm^3.

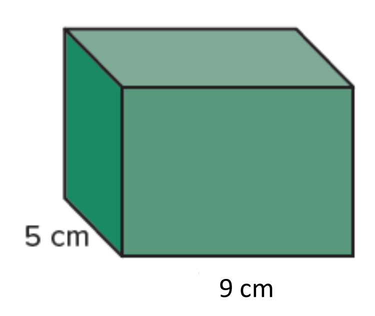
5) A cuboid whose volume 20 cm^3 and the area of its base is 4 cm^2 ,then its height = …… cm.

6) A cuboid whose volume 36 cm^3,length 4 cm and width 3 cm the height………………….cm.

7) If the volume of a rectangular prism is 27 cubic centimeters and its height is 3 cm, then the area of its base is ………… cm^2.

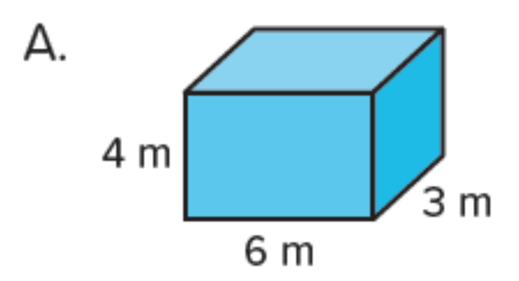


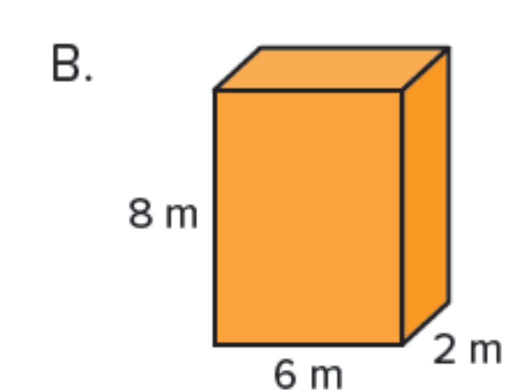
1) The volume of a rectangular prism is 450 cm^3, find the missing dimension

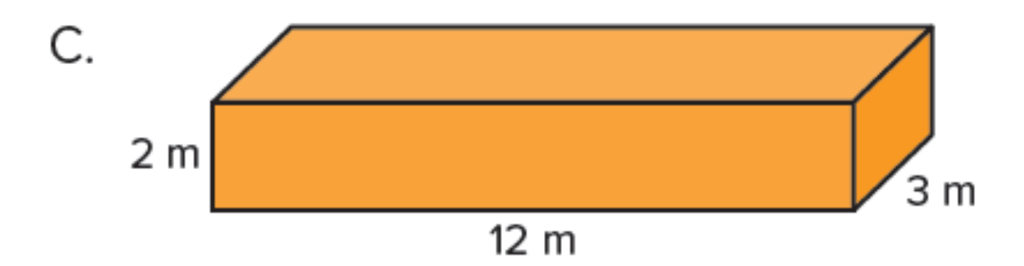


2) Which is greater in volume?
A rectangular prism of dimensions 8 cm, 5 cm, and 2 cm
OR a rectangular prism of base area 10 cm^2 and height is 6 cm.

3) Compare the dimensions of the rectangular prisms. Which the two prisms have the same volume









Lesson 7

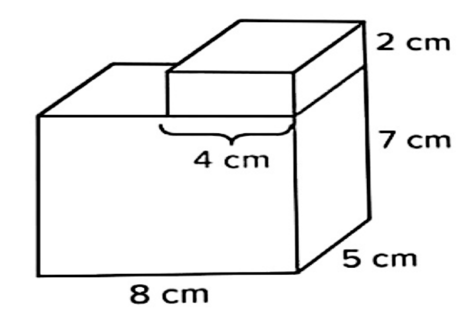
Finding the Volume of Compound Shapes

1) complete:

a) a rectangular prism of the length 7cm, width 5cm and height 2cm, then its volume = ……………………………………………. Cm^3.

b) a rectangular prism of the length 40 cm, width 30 cm and height 20 cm, then its volume = ……………………………………………. Cm^3

2) use the given solid figure to answer questions:



a) what is the volume of the larger prism on the bottom of the compound shape?

……………………………………………………………

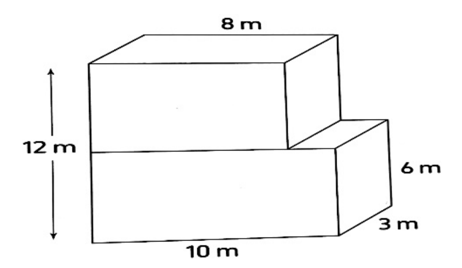
b) what is the volume of the smaller prism on the top of the compound shape?

…………………………………………………………………………………………………..

c) what is the total volume of the compound shape?

…………………………………………………………………………………………………..

3) find the volume of the given compound shapes:



Volume = …………………………….



Lesson 8

Solving Real- World Volume Story Problems

a) The oldest canopic chest ever found was that of hetepherese , mother of king Khufu the chest measures about 50 cm long , 40 cm wide , and 30 cm tall.

What is the volume of the chest?

……

……

b) Ali built a planter box for his backyard. the length of the planter box was 120 cm, the width was 80 cm, and the height of the box was 100 cm.
Ali poured soil into the box up to 50 cm height line.

1) what is the volume of the planter box?

……

2) what is the volume of the soil?

……

c) Omar built a small planter box for his window. he planned to fill it to the top with 15,000 cubic cm of the soil. The base of the planter box measured 50 cm long and 10 cm wide. What should the height of the box be to hold all the soil?

……

……

d) Hamza built a model of a sarcophagus from cardboard the model was 30 cm long, 10 cm wide and 8 cm tall. IS it possible for Hamza to fit a rectangular canopic chest with an interior volume of 3000 cubic cm inside?

……

……



e) Rami wanted to build a new shed. He had a spot outside his house that had an area of 6 meters long by 4 m wide. He needed the new shed to have a volume of 120 cubic meter. how tall the shed need to be?

………

………

f) Amani built a tower using cm cubes. the area of the base of her tower is 18 square cm. the tower is 12 cm tall.
How many centimeters cubes did Amani use?

………

………





Lesson 9
Building Three-Dimensional Cities

Activity

On your large sheet of paper, Draw a map of your city first.

1. **At least two parallel roads.**
2. **At least 1 road that is perpendicular to another.**

Then, add your building to the map.

Trace, fold, stick, put on the map, and create your own city.

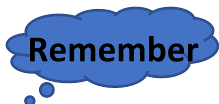
Label all three-dimensional figures on your map



Unit 12

Understanding Pie charts

A pie chart is a circle divided into slices [sectors]. It is a simple way to show the size [or the fraction] that represents each item relative to the whole pie.



$\frac{1}{10}$ = 0.1	$\frac{1}{4} = \frac{25}{100}$ = 0.25	$\frac{1}{2} = \frac{5}{10}$ = 0.5	$\frac{3}{4} = \frac{75}{100}$ = 0.75	$\frac{1}{5} = \frac{2}{10}$ = 0.2

Note: The sum of all decimals = 1

Q1. The opposite figure shows the decimals of sales of different types of books.

Complete:

a. The sales decimal of French books is……….

b. The sales decimal of Science books is………

c. The least sales decimal is in…………

d. The ascending order of books types according

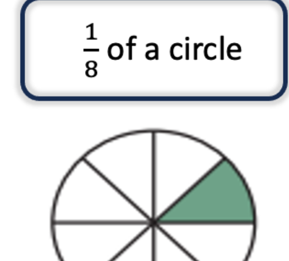
to the decimals of sales is: ………..,……………,…………..,…………….and………





- The sum of all decimals = 1
- Each circular sector has an angle whose vertex is the center of the circle (Central Angle).
- The sum of angles around the center of circle is equal to 360˚.
- The measure of the central angle that represents:

$\frac{1}{8}$ of a circle



$\frac{1}{8} \times 360° = 45°$

$\frac{1}{6}$ of a circle



$\frac{1}{6} \times 360° = 60°$

$\frac{1}{4}$ of a circle



$\frac{1}{4} \times 360° = 45°$

$\frac{1}{2}$ of a circle



$\frac{1}{2} \times 360° = 180°$

$\frac{3}{4}$ of a circle



$\frac{3}{4} \times 360° = 270°$



Making Pie charts

Q2. When some students were asked about the most popular TV programs, the following data were extracted:

- $\frac{1}{2}$ **of the students like to watch sports programs.**
- $\frac{1}{4}$ **of the students like to watch cultural programs.**
- $\frac{1}{8}$ **of the students like to watch Arabic and foreign movies.**
- $\frac{1}{8}$ **of the students like to watch news.**

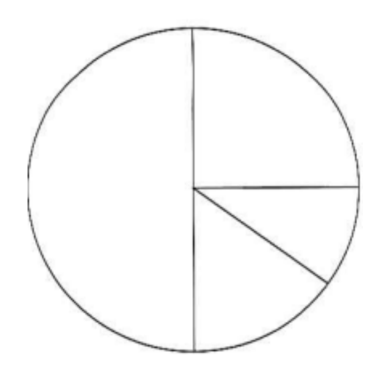


a) **Represent that given data using the opposite pie chart.**

b) **If the number of all students was 48 students,**
what is the number of students who prefer watching each type of programs?

Q3. The following table shows the rate of the score of 200 students in one school.

Rate	Excellent	Good	Pass	Weak
Fraction	$\frac{3}{20}$	$\frac{1}{2}$	$\frac{1}{4}$	$\frac{1}{10}$



a. Represent these data by the opposite pie chart.

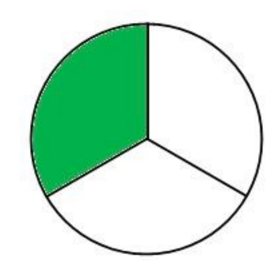
b. Find the number of excellent students.



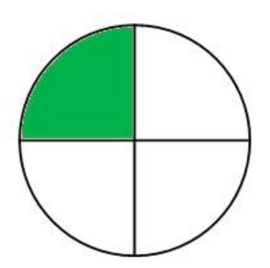


Q4. For each task, select the circular degrees that match the fraction of the circle

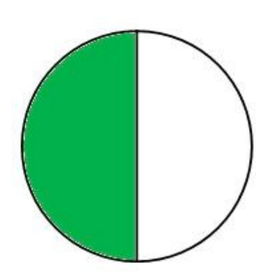
that is shaded. (A circle has 360 degrees).



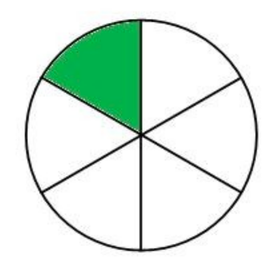
A. 50° C. 60°
B. 120° D. 30°



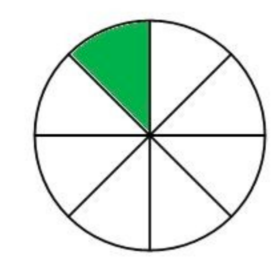
A. 180° C. 60°
B. 45° D. 90°



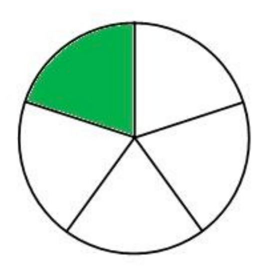
A. 180° C. 120°
B. 90° D. 45°



A. 45° C. 30°
B. 60° D. 90°



A. 45° C. 30°
B. 60° D. 90°



A. 180° C. 60°
B. 45° D. 90°



The fraction that represents the item = $\frac{The\ value\ of\ the\ item}{Total\ values\ of\ all\ items}$

Q1: Complete each table.

a. Sample Size:120 students.

Favorite movie	comedy	action	drama	cartoon	horror
Frequency	40	25	10	25	20
Fraction					

b. Sample Size: 200 students.

Favorite pet	dogs	cats	birds	fish	hamsters
Frequency	50	40	40	60	10
Fraction					

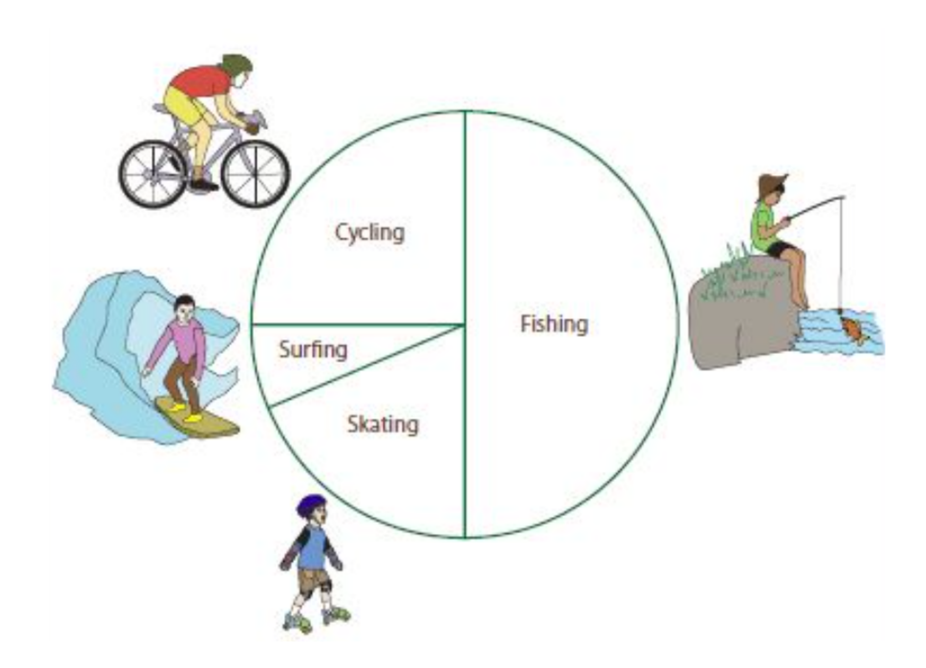
c. Sample Size: 100 students

Favorite color	red	pink	green	blue	black
Frequency	40	5	15	30	10
Fraction					



Q2: frequency table shows the favorite outdoor activities of a group of 60 children.

complete the table in the simplest form for each activity.



activity	**fishing**	**cycling**	**surfing**	**skating**
Frequency	30	15	5	10
Fraction				



Q3: complete:

a) The measure of the angle of a circular sector which represents $\frac{1}{3}$ of the area of the circle equals …………….

b) The measure angle for the sector of quarter circle is ……………………. degree.

c) The measure of the angle of the circular which area represents $\frac{1}{8}$the area of the circle ………………

d) The sum of the measures of the angles around the point is …………….. degree.

e) The angle of the sector is called……. Because its vertex at the Centre of the circle.

f) A pie-chart whose angle measure is 60°, then its area represents ……… of the circle area ($\frac{1}{3}$ or $\frac{1}{4}$ or $\frac{1}{5}$ or $\frac{1}{6}$)

